

4 EXISTING CONDITIONS

4.1 Drainage Systems

The Capacity Study area is serviced by separated sewer systems, including approximately 64 km of sanitary sewers and 86 km of storm sewers, as illustrated in **Figure 4.1** and **Figure 4.2**. The sanitary sewer system in the study area discharges to the West Don sanitary trunk sewer (STS) that ultimately drains into the Ashbridges Bay wastewater treatment plant. The storm drainage system includes 62 storm outfalls along the West Don River branches and tributaries. Approximately 30% of the storm sewers are identified as shallow sewers.

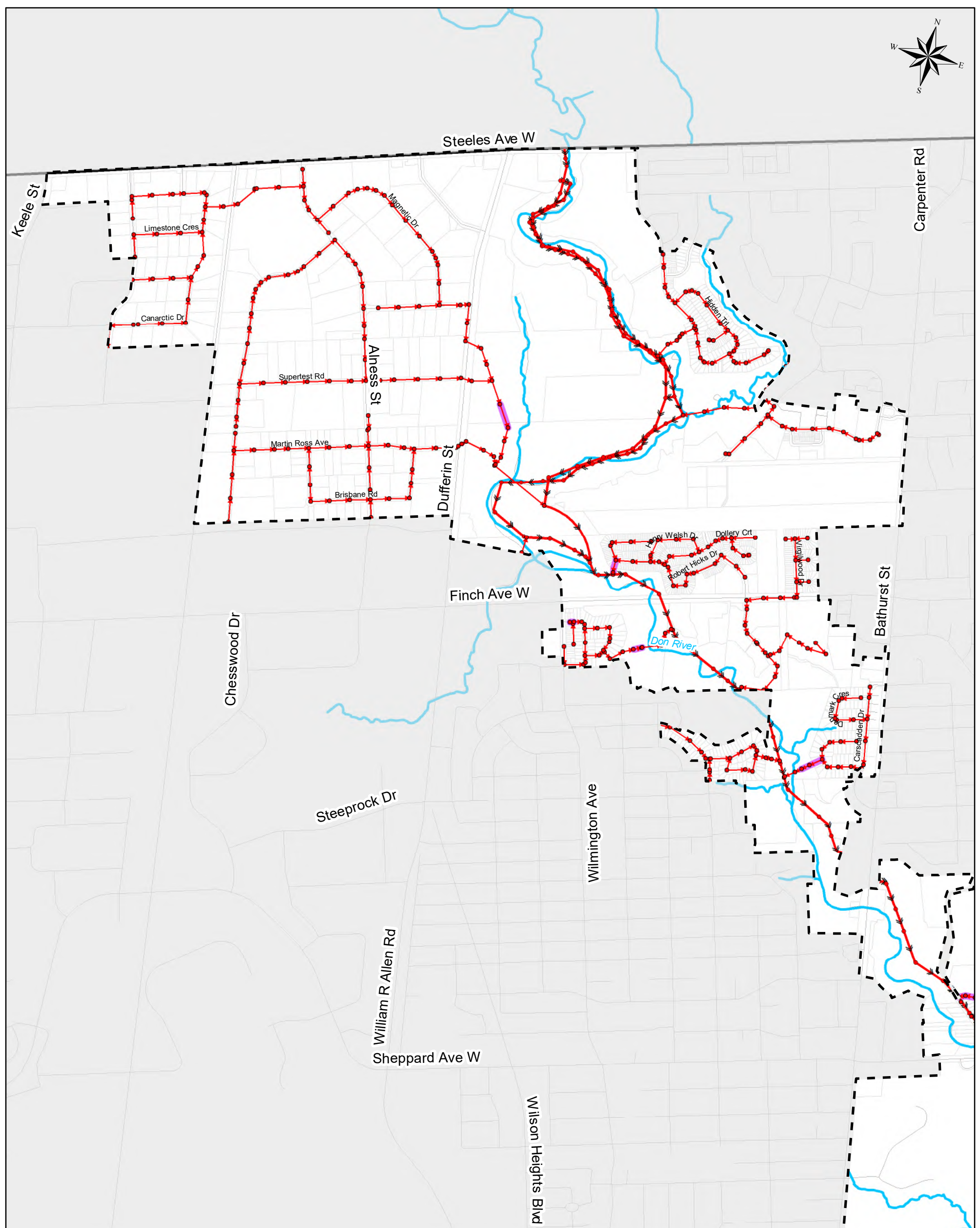
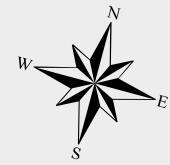
The sewer systems were constructed between 1940 and 2018. Approximately 59% of the storm sewers and 76% of the sanitary sewers were constructed between 1940 and 1969, indicating that 17% of the developed neighbourhood did not have storm sewers at the time of construction and the foundation drains were most likely connected to sanitary sewers. Based on the 10 drain cards collected, it was also determined that the properties developed prior to the 1960's have their weeping tiles (foundation drains) connected to the sanitary system. This finding is consistent with the connection policies / by-laws. While the requested drain cards can be helpful in identifying foundation drain connections to the municipal system, it must be recognized that this information may not reflect actual as-built conditions. The City has experienced actual plumbing conditions that differ from the drain plan on file, so this information must be reviewed and used cautiously. Any homeowner isolation improvement works should not rely on the drain card records alone, instead engaging a licensed drainage contractor to thoroughly investigate their internal plumbing connectivity to determine the most effective measures required.

The overland system includes the network of streets that can temporarily store and convey runoff when flows exceed the capacity of the storm sewer system and/or catchbasins. This surface flow accumulates at low points causing ponding. An illustration of the overland system and low points within the study area can be found in **Figure 4.3**.

4.2 Socio-Economic Environment

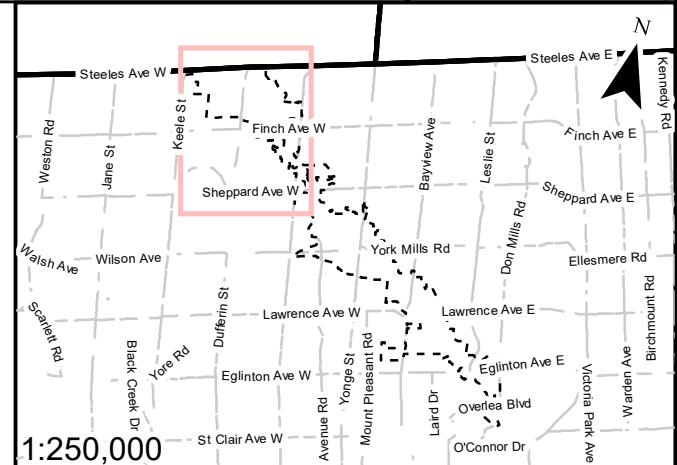
4.2.1 Land Use Classification and Servicing Population

The predominant land use within the Capacity Study area is open space representing approximately 40% of the service area. Approximately 27% of the service area is ICI, consisting of 12% industrial, 4% commercial and 11% institutional lands. The residential lands, including 21% single family and 3% multi-level family, totals approximately 24% of the study area. The remaining 9% of the lands are classified as unknown, vacant and other. Since the West Don River traverses A58, the study area is comprised of extensive natural lands and river corridor. The residential lands are also located surrounding the creek corridor. A significant concentration of industrial and commercial development is located on the north-west side of the study area, south of Steeles Avenue West between Keele Street and Dufferin Street, as well as the middle of the study area, encompassed by Bayview Avenue, West Don River and Glenvale Boulevard. Scattered commercial and institutional buildings can be observed throughout the study area. **Figure 4.4** illustrates the land uses for the study area and **Table 4.1** summarizes the data.



- Legend**
- Municipal Boundary
 - Sanitary Boundary (Revised)
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

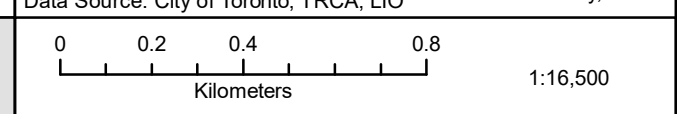
- Sanitary System Network:**
- Sanitary Sewer
 - Sanitary Trunk Sewer
 - Shallow Sanitary Sewers
 - Sanitary Nodes

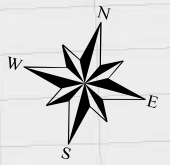
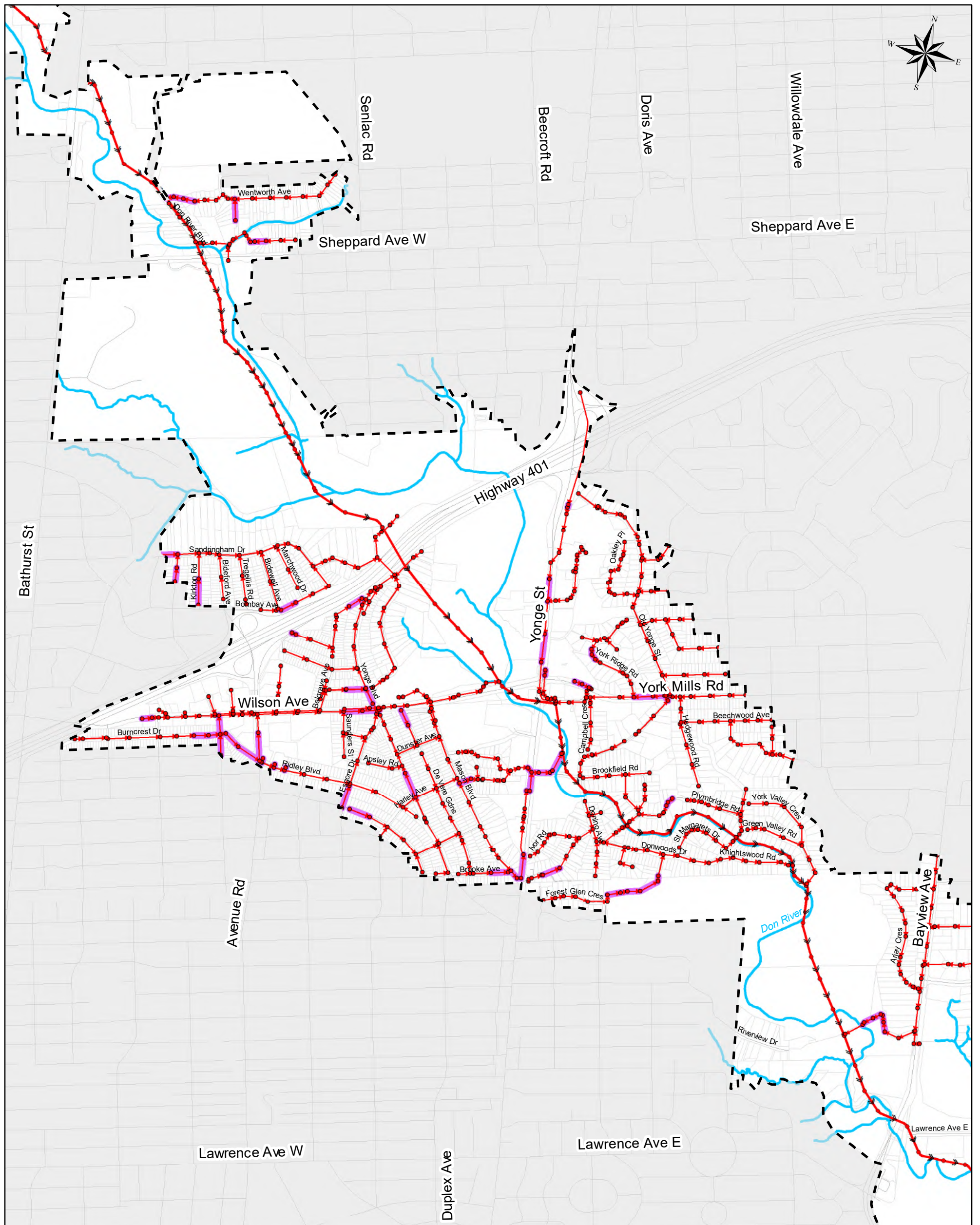


1:250,000
 Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020



Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.1 (A)
 Sanitary Sewer System



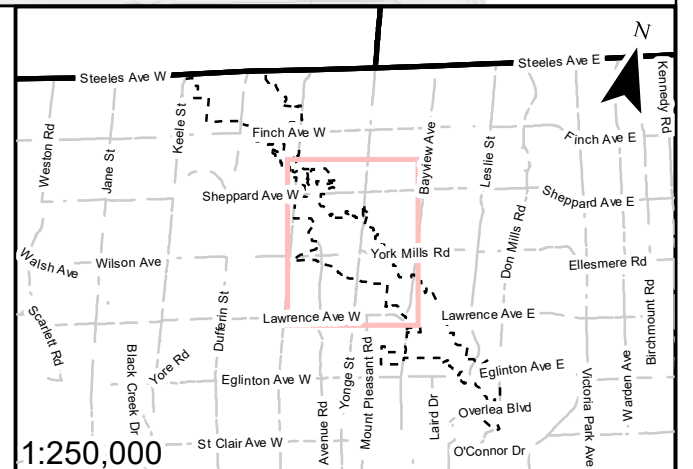


Legend

- Municipal Boundary
- Sanitary Boundary (Revised)
- Property Parcel
- Road Centreline
- Watercourse (TRCA, 2012)

Sanitary System Network:

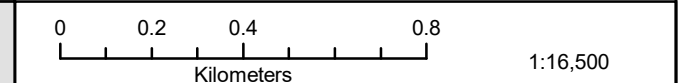
- Sanitary Sewer
- Sanitary Trunk Sewer
- Shallow Sanitary Sewers
- Sanitary Nodes

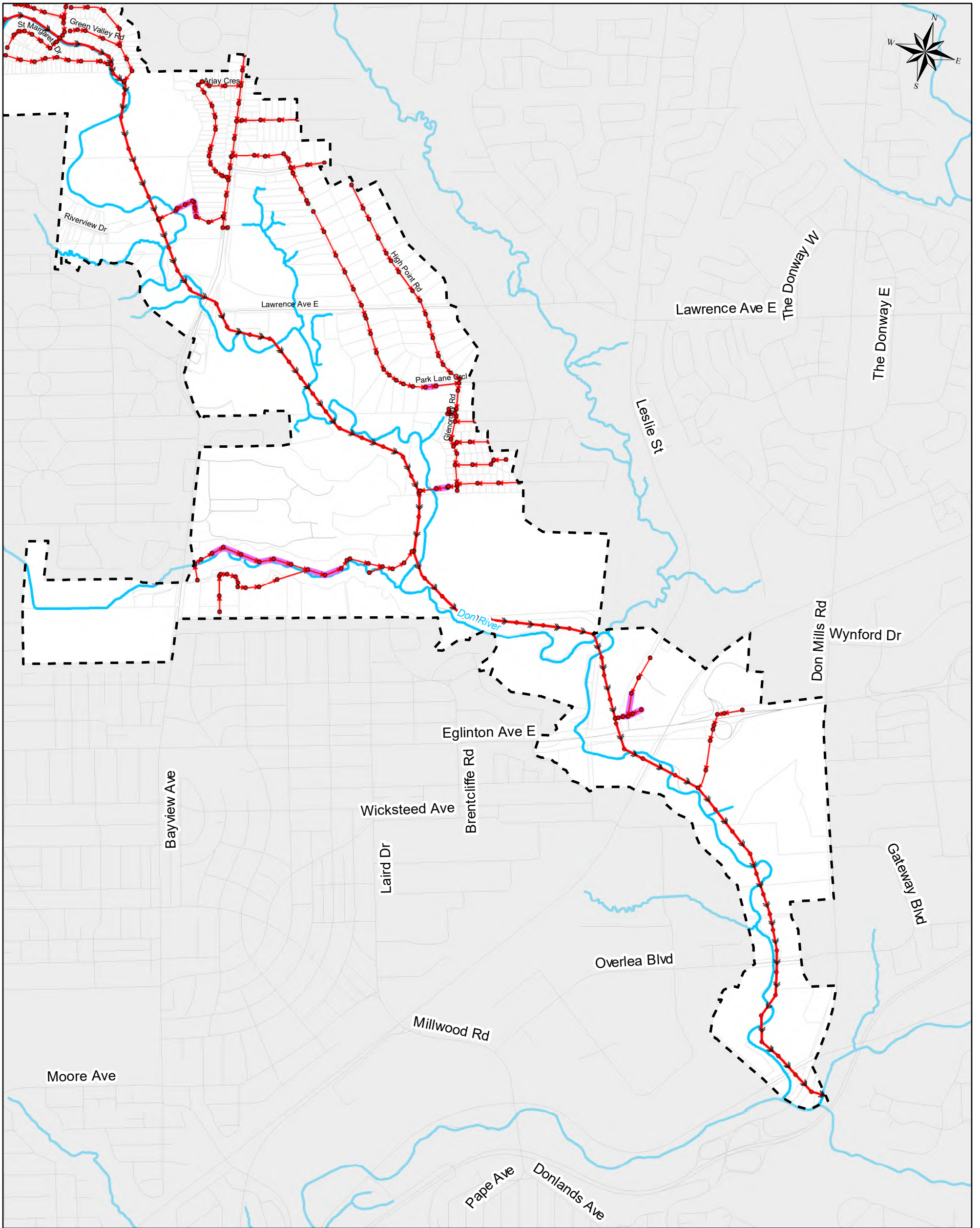


Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020



Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.1 (B)
 Sanitary Sewer System





- Legend**
- Municipal Boundary
 - Sanitary Boundary (Revised)
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

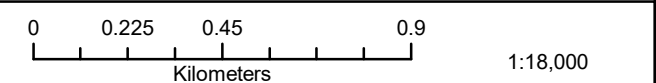
- Sanitary System Network:**
- Sanitary Sewer
 - Sanitary Trunk Sewer
 - Shallow Sanitary Sewers
 - Sanitary Nodes

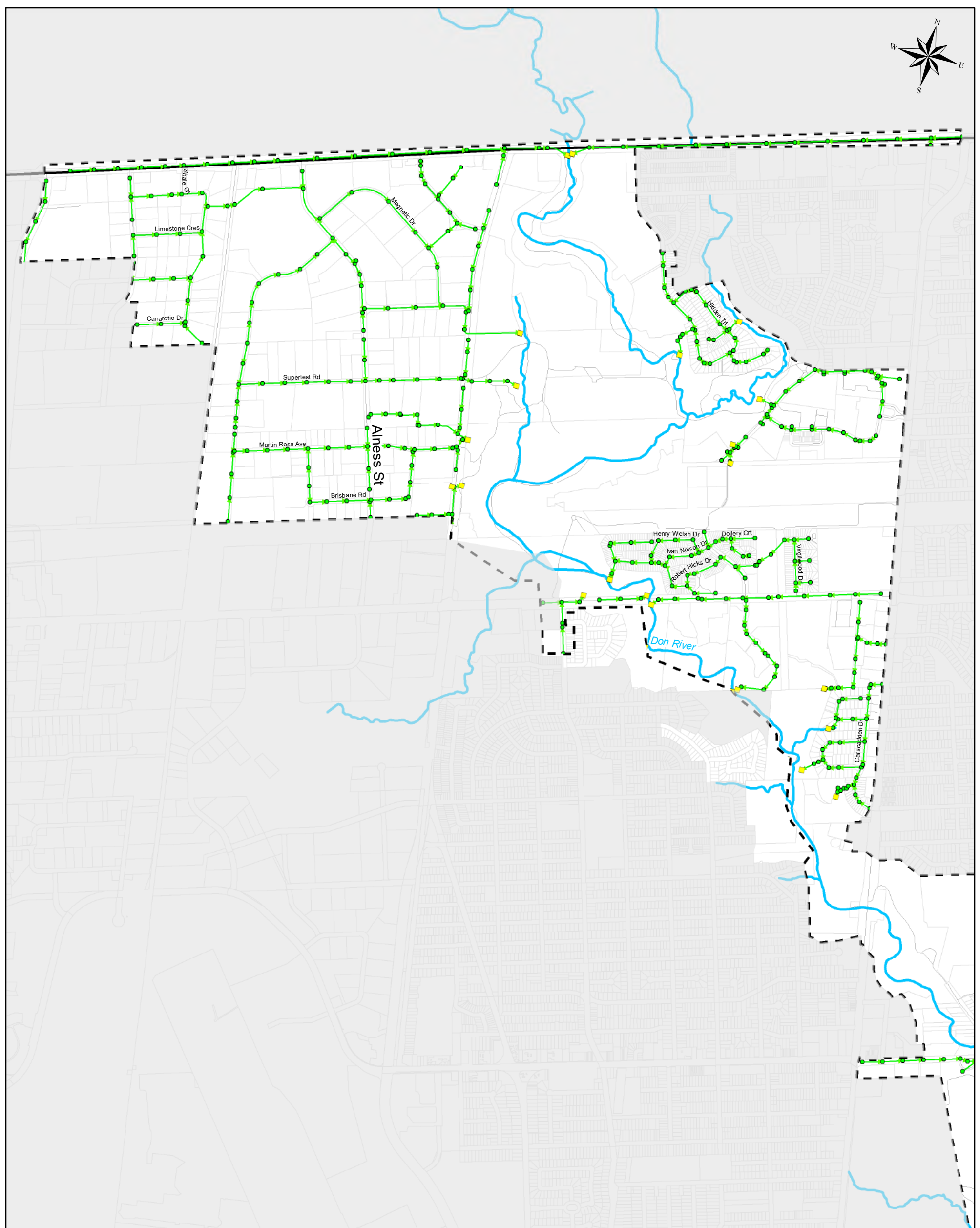
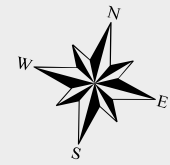


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 Date: May, 2020



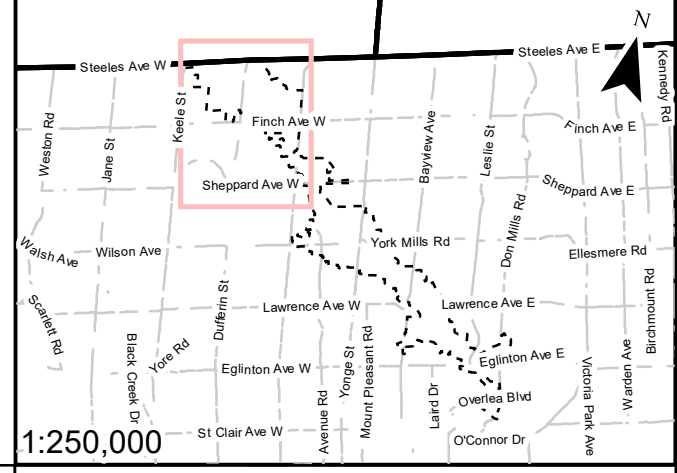
Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.1 (C) Sanitary Sewer System





- Legend**
- SCHB_shallowpipes
 - Municipal Boundary
 - Storm Boundary
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

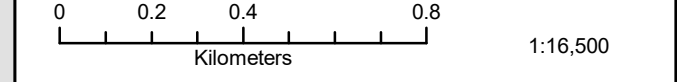
- Storm System Network**
- Storm Sewer
 - Shallow Storm Sewer (0)
 - Manhole
 - Outfall

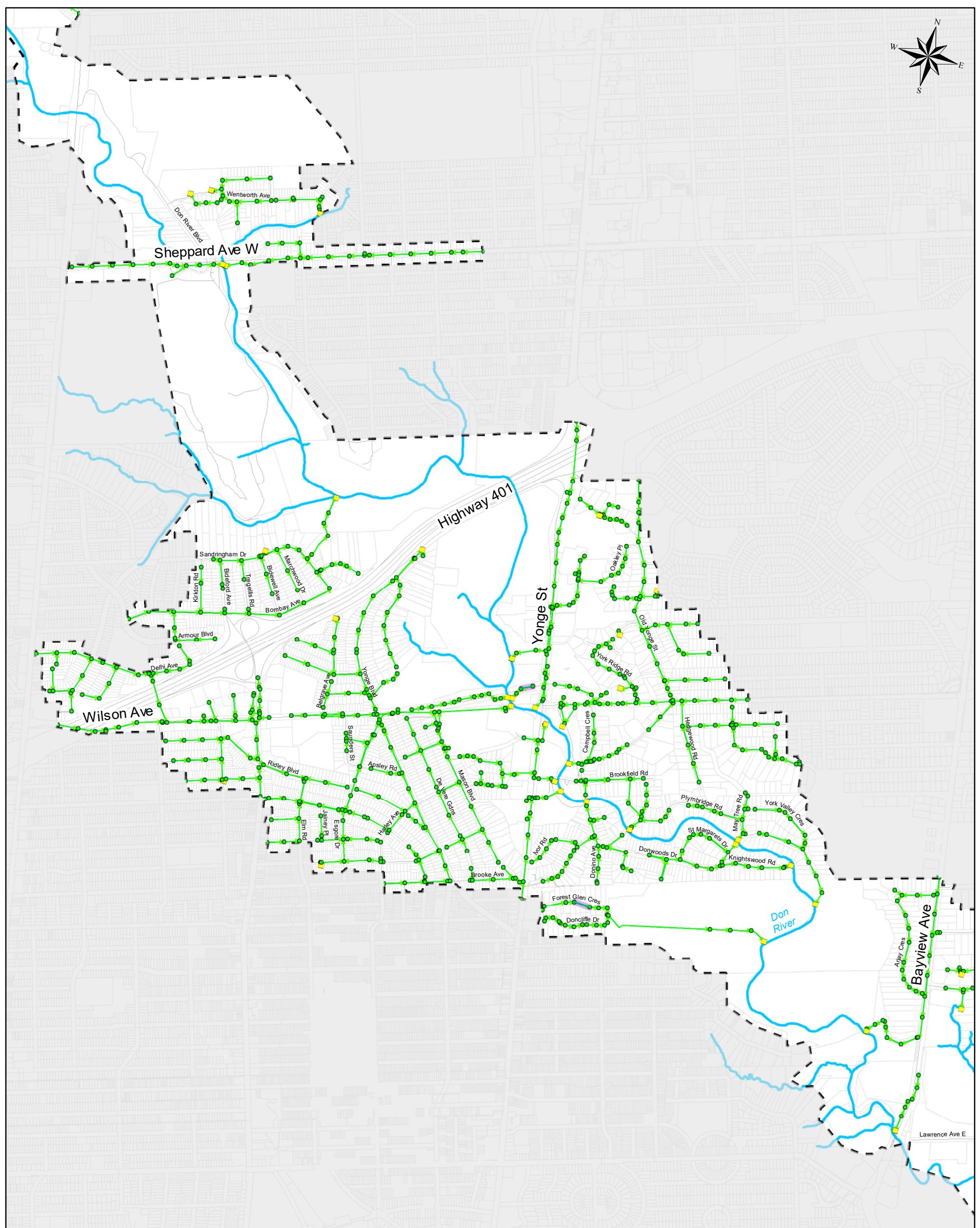
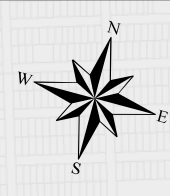


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 Date: May, 2020



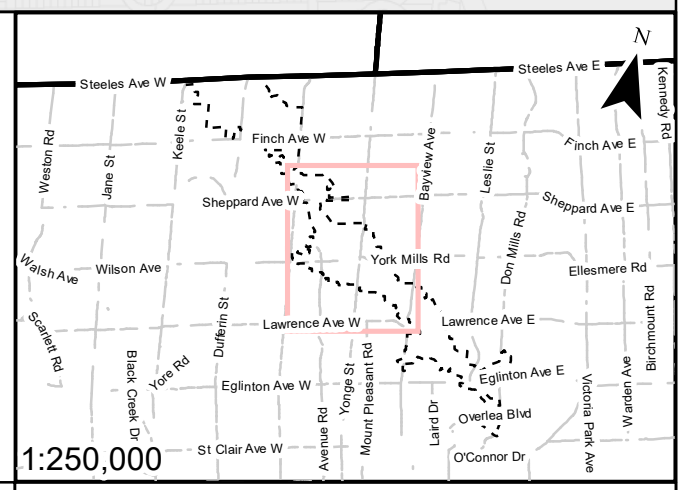
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 Title: Figure 4.2 (A)
 Storm Sewer System





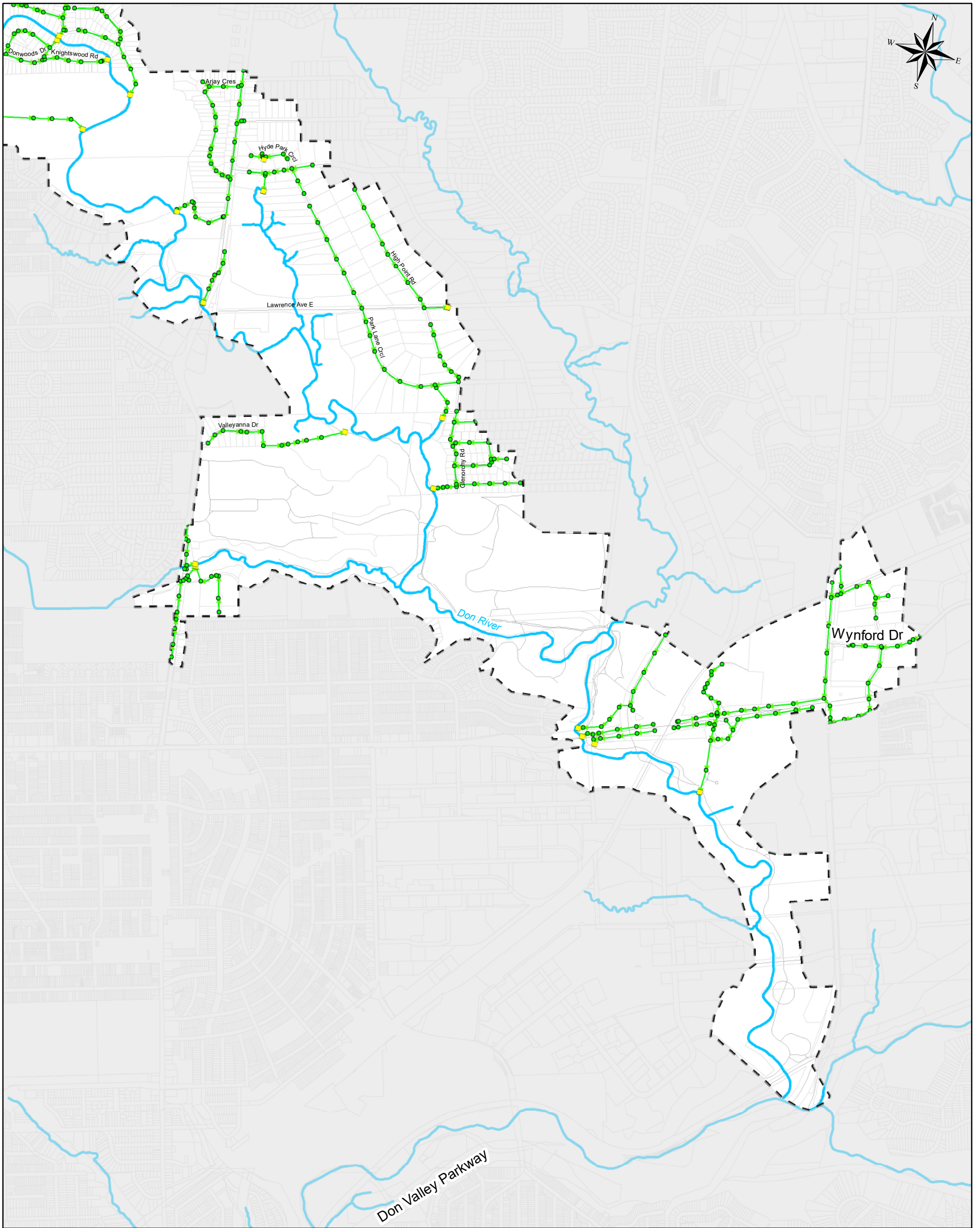
- Legend**
- SCHB_shallowpipes
 - Municipal Boundary
 - Storm Boundary
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

- Storm System Network**
- Storm Sewer
 - Shallow Storm Sewer (3)
 - Manhole
 - Outfall



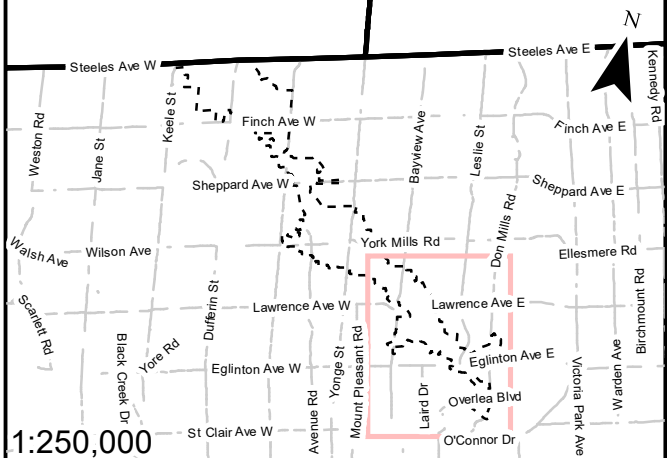
Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.2 (B) Storm Sewer System

Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020
 0 0.2 0.4 0.8
 Kilometers
 1:16,500



- Legend**
- SCHB_shallowpipes
 - Municipal Boundary
 - Storm Boundary
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

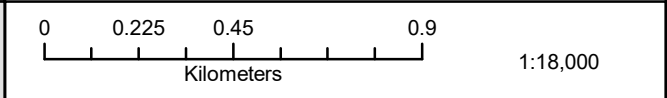
- Storm System Network**
- Storm Sewer
 - Shallow Storm Sewer (0)
 - Manhole
 - Outfall

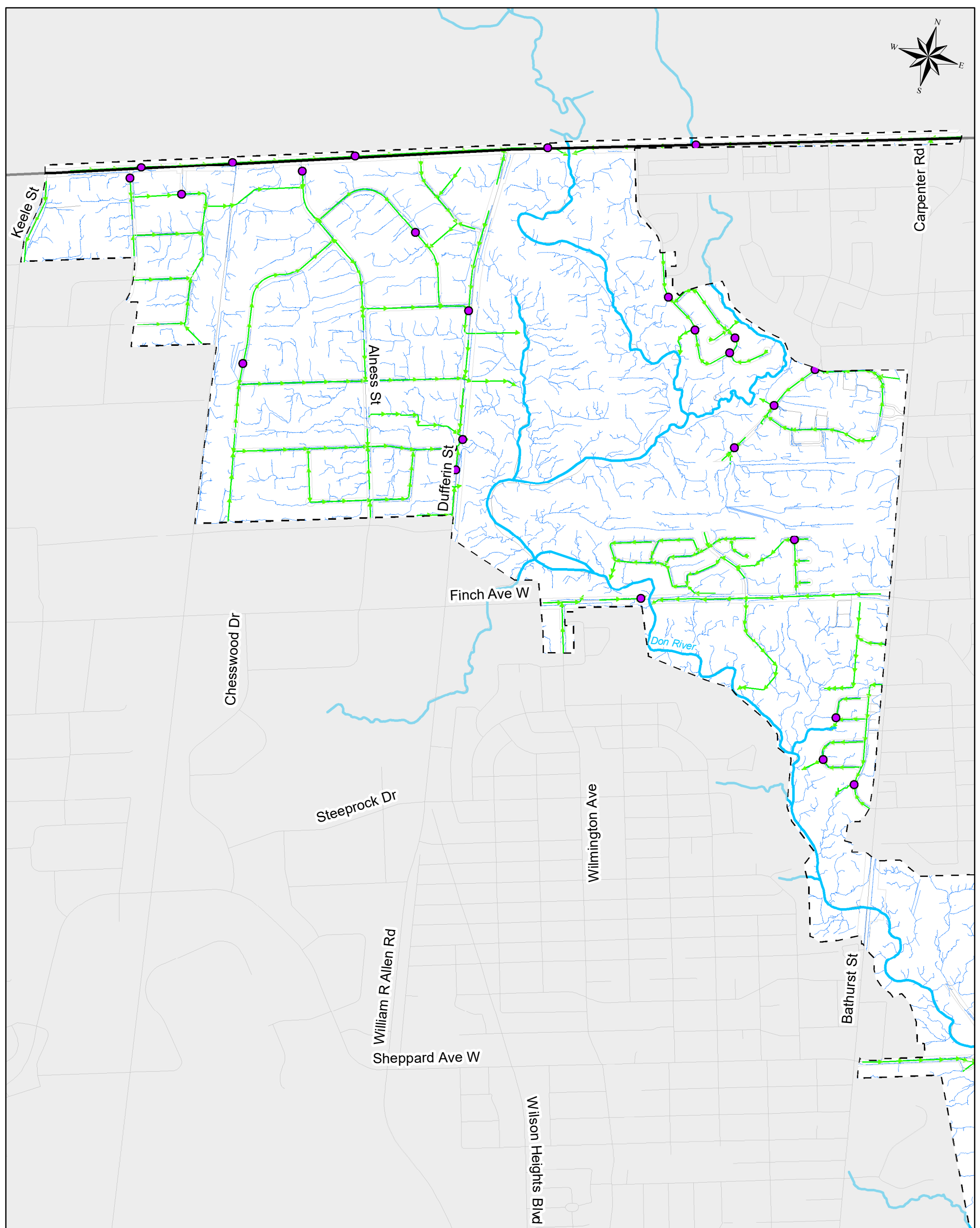
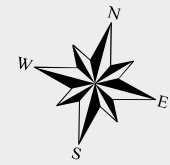


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 Date: May, 2020

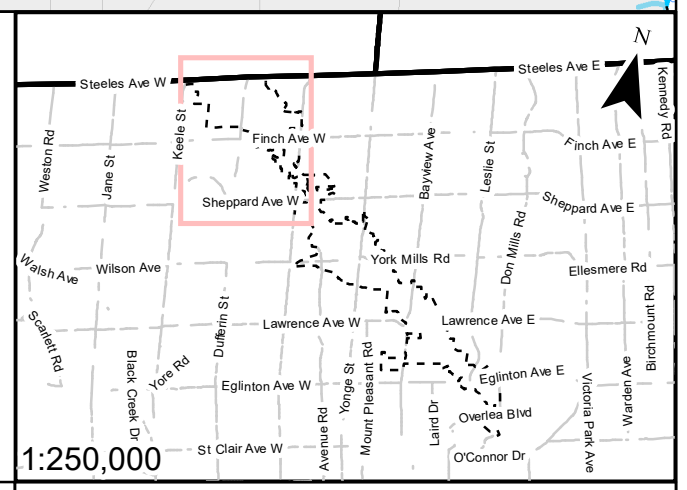


Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.2 (C) Storm Sewer System



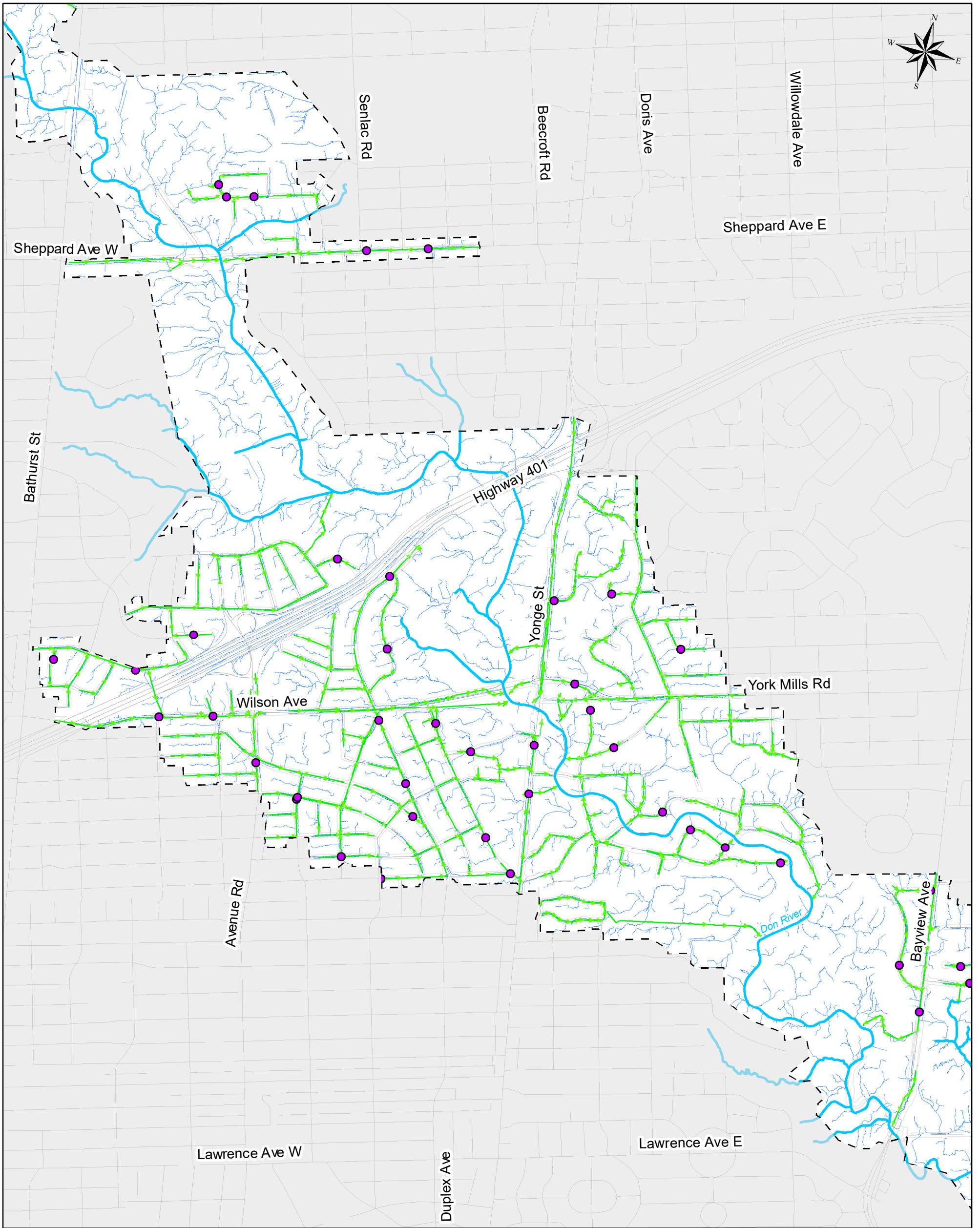


- Legend**
- Municipal Boundary
 - Storm Boundary
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)
 - Storm Sewer
 - Overland Flow Path
 - Low Point Locations











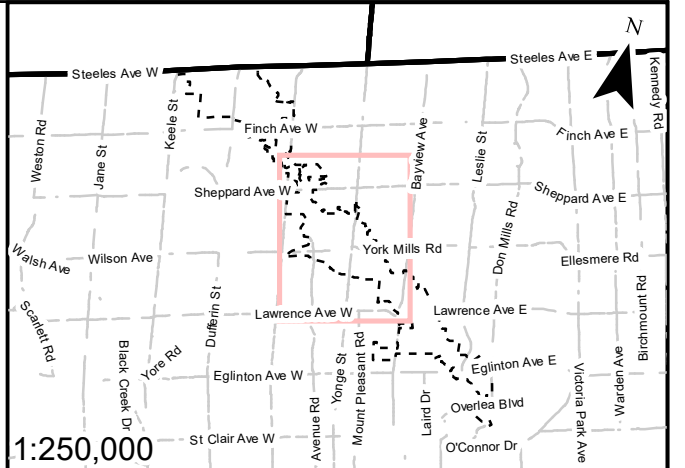
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 Title: Figure 4.3 (A)
 Overland Flow Paths & Low Points

Projection: NAD_1983_CSRS_MTM_10
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 Date: May, 2020
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 Kilometers
 1:16,500



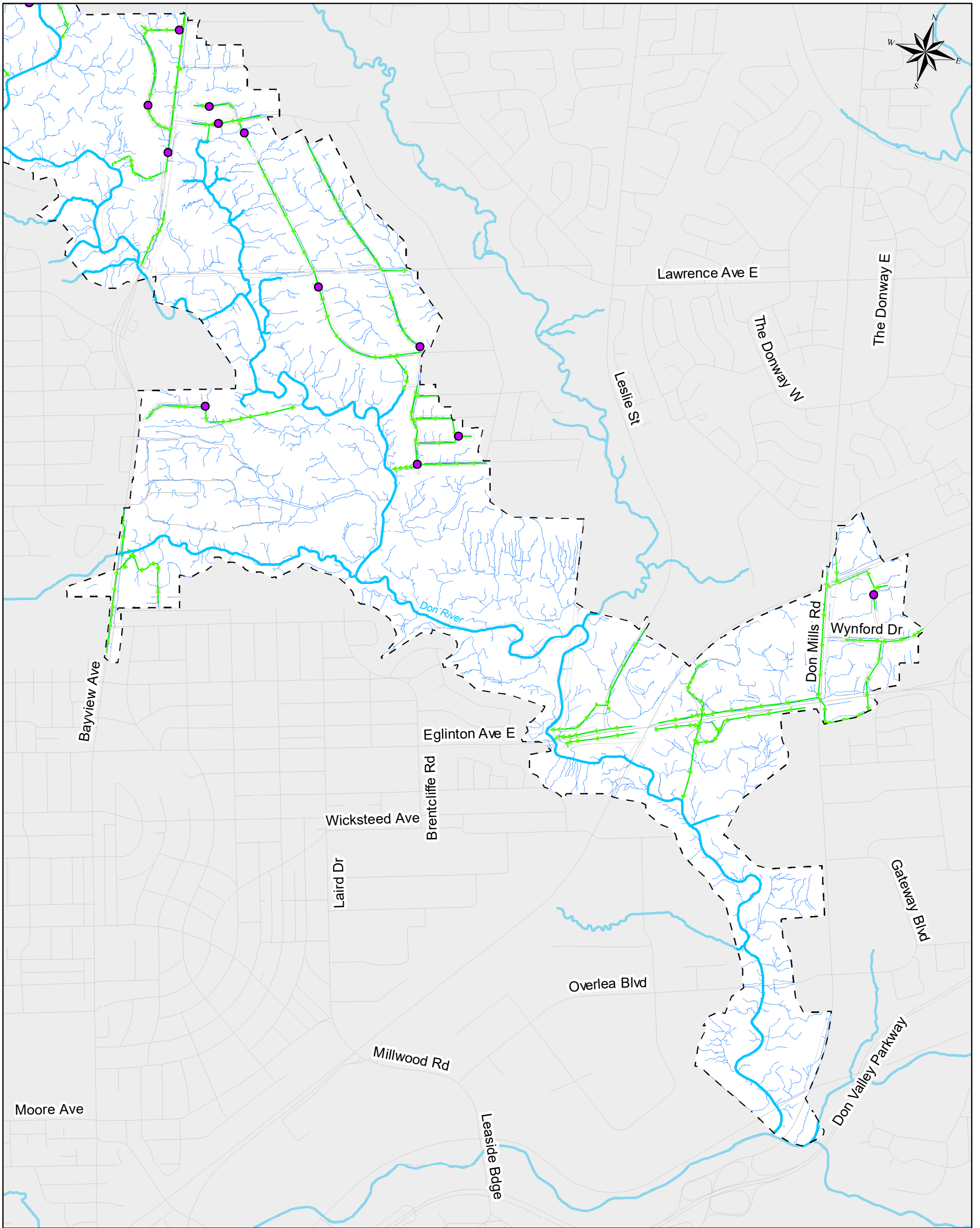
Legend

-  Municipal Boundary
-  Storm Boundary
-  Property Parcel
-  Road Centreline
-  Watercourse (TRCA, 2012)
-  Storm Sewer
-  Overland Flow Path
-  Low Point Locations



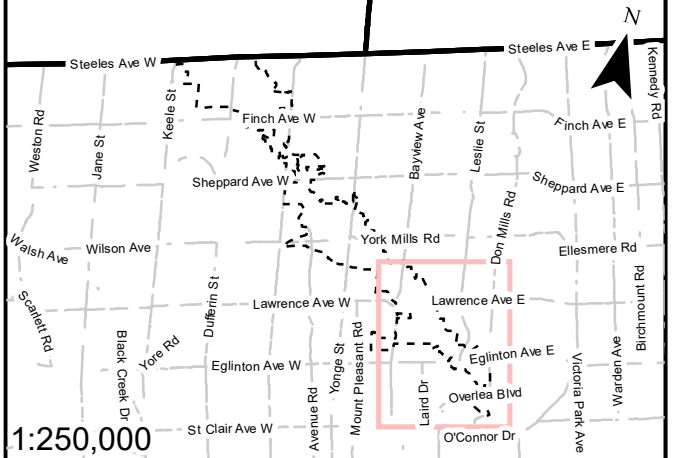
Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.3 (B)
 Overland Flow Paths & Low Points

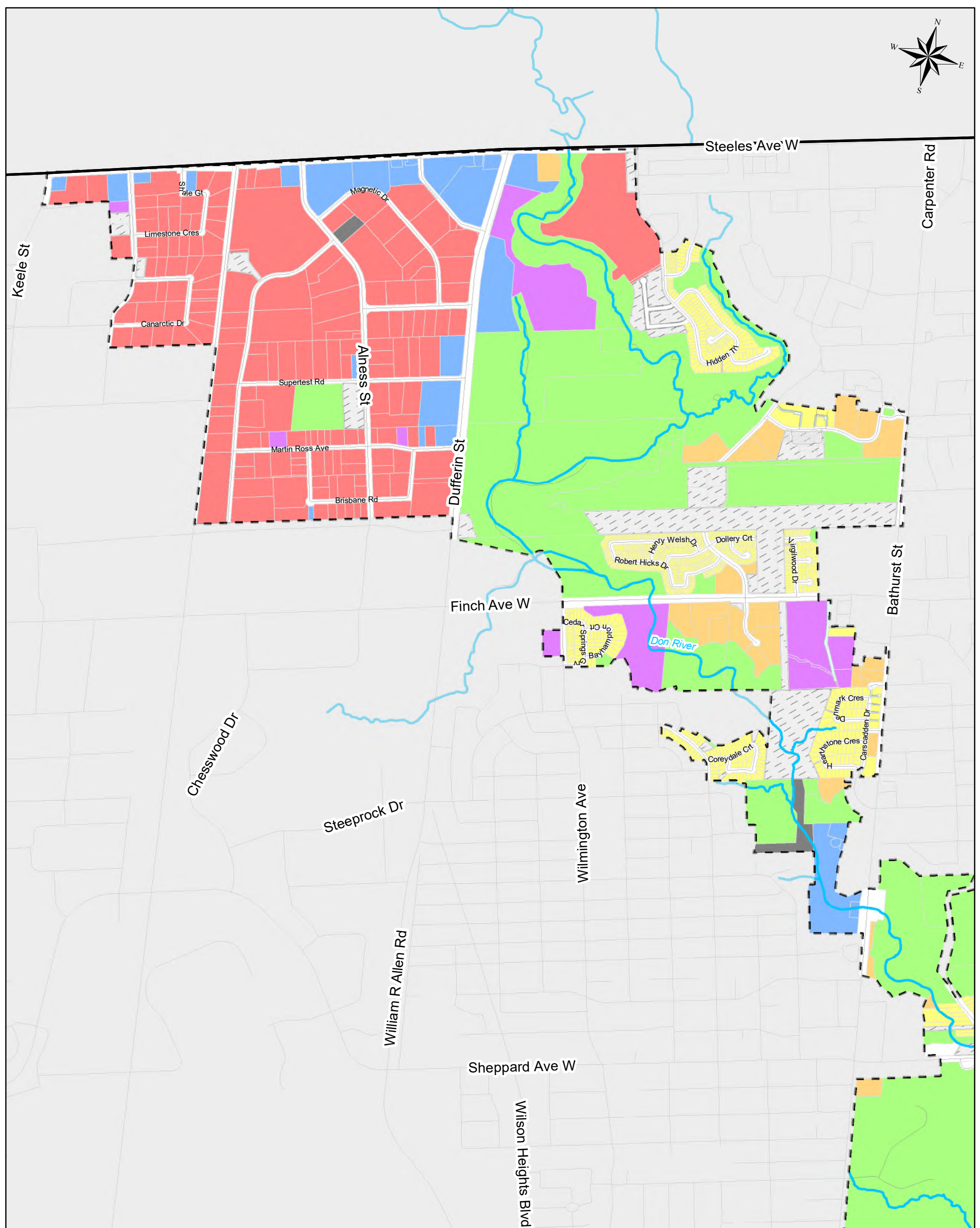
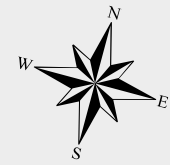
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Legend

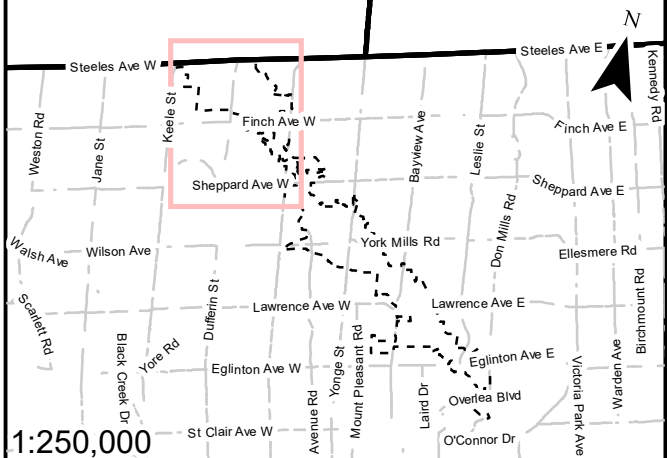
- Municipal Boundary
- Storm Boundary
- Property Parcel
- Road Centreline
- Watercourse (TRCA, 2012)
- Storm Sewer
- Overland Flow Path
- Low Point Locations





- Legend**
- Municipal Boundary
 - Sanitary Boundary (Revised)
 - Property Parcel
 - Road Centreline
 - Watercourse (TRCA, 2012)

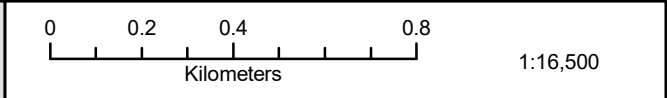
- Land use Classification:**
- Commercial
 - Industrial
 - Institutional
 - Land use to be Verified
 - Multi-level Residential
 - Open Space
 - Other Roads/Lanes/Walkways
 - Residential Singles
 - Utilities + Transportation

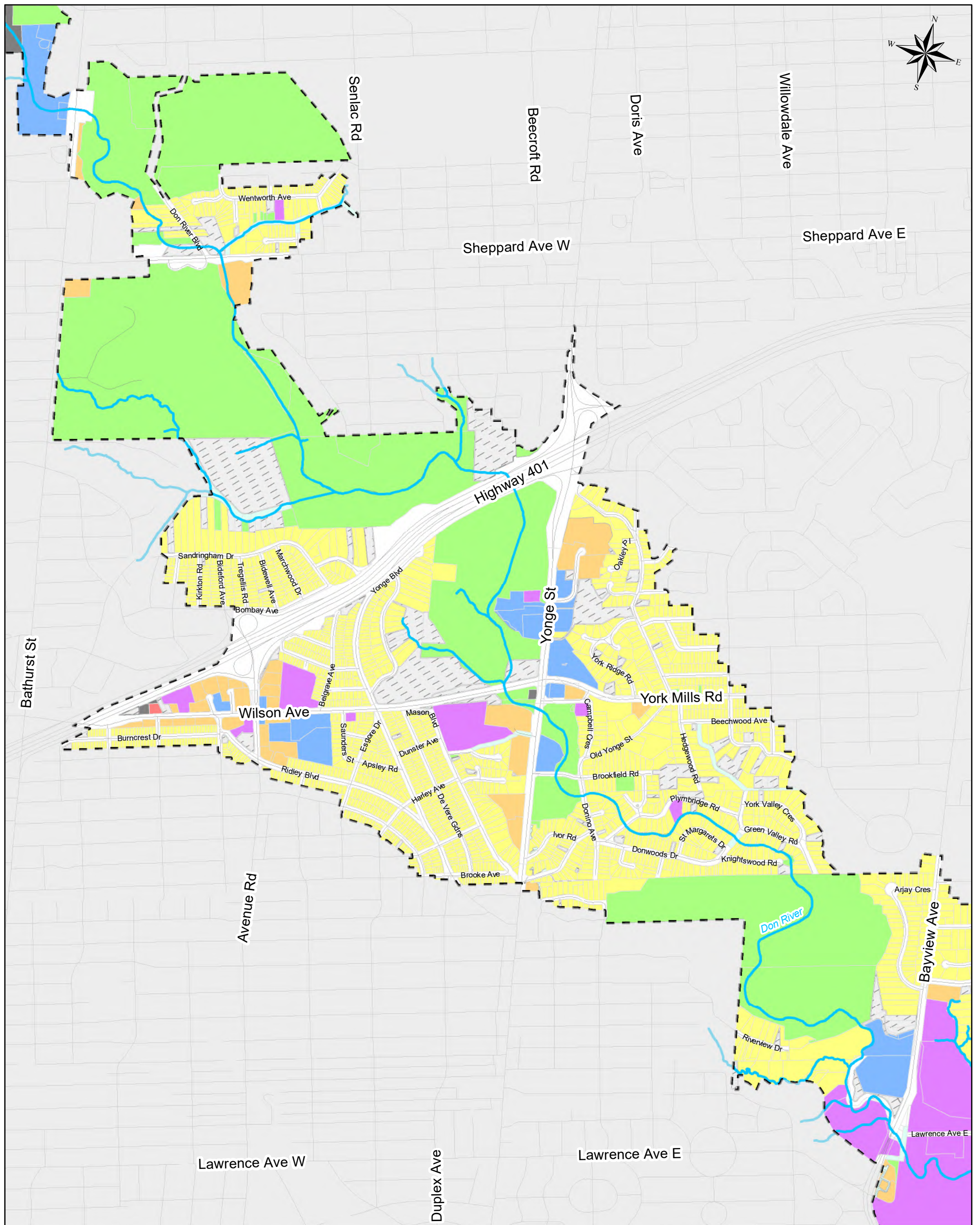


Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020



Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.4 (A)
 Land use Classification



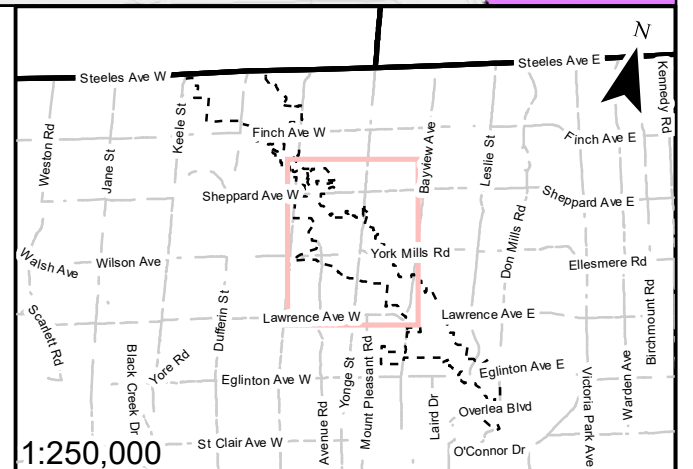


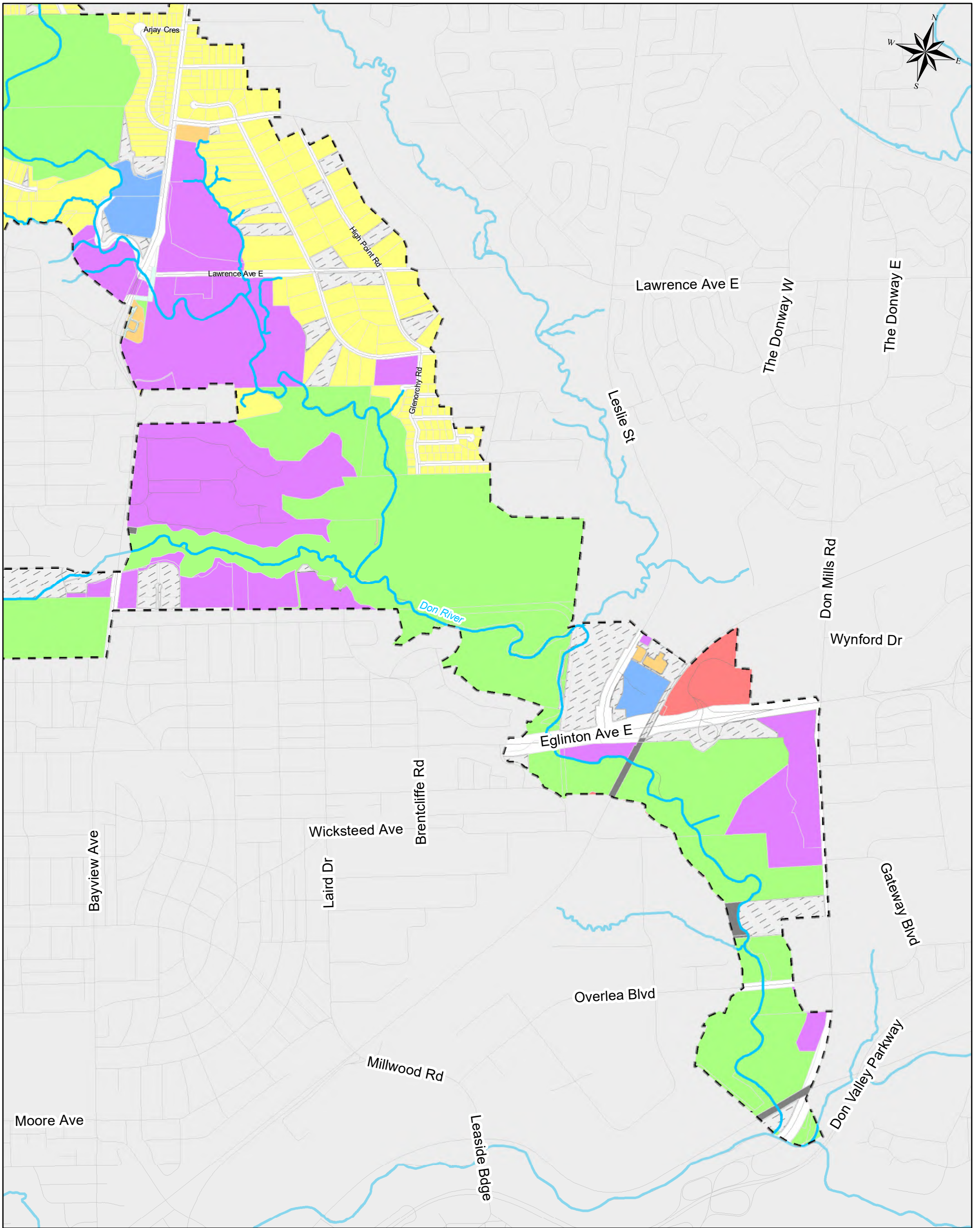
Legend

- Municipal Boundary
- Sanitary Boundary (Revised)
- Property Parcel
- Road Centreline
- Watercourse (TRCA, 2012)

Land use Classification:

- Commercial
- Industrial
- Institutional
- Land use to be Verified
- Multi-level Residential
- Open Space
- Other Roads/Lanes/Walkways
- Residential Singles
- Utilities + Transportation



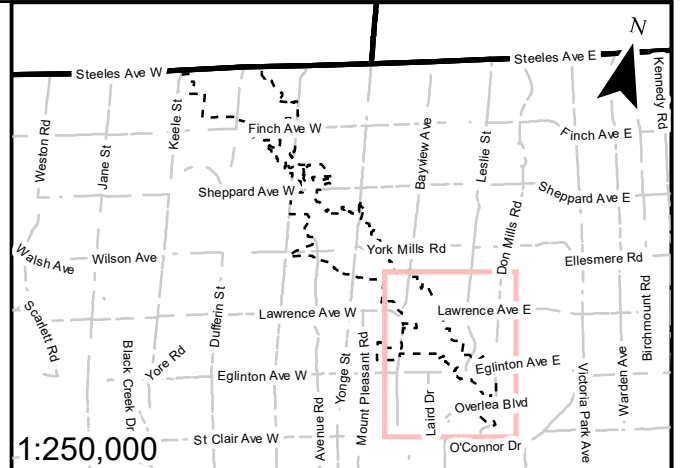


Legend

- Municipal Boundary
- Sanitary Boundary (Revised)
- Property Parcel
- Road Centreline
- Watercourse (TRCA, 2012)

Land use Classification:

- Commercial
- Industrial
- Institutional
- Land use to be Verified
- Multi-level Residential
- Open Space
- Other Roads/Lanes/Walkways
- Residential Singles
- Utilities + Transportation

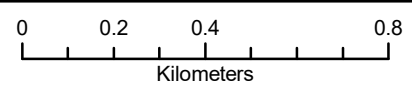


Project: Toronto Basement Flooding Study Area 58

Title: Figure 4.4 (C)
Land use Classification

Projection: NAD_1983_CSRS_MTM_10
Data Source: City of Toronto, TRCA, LIO

Date: May, 2020



1:16,500



Population data including 2016 census data and the 2041 future population projection were provided by the City. The 2016 census data includes the population for residential areas and trade flow for ICI areas. The 2041 future population projection file consists of projected population for both residential and ICI areas. Employment population was estimated based on the provided trade flow, together with the average daily flow of 240 L/c/d as per the RFP and a Harmon PF of 1.0. Additionally, data gaps including missing population data were identified within the dataset and assumptions were made based on the records from adjacent properties.

The Capacity Study area consists of 3,925 properties with approximately 24,000 residents and 20,500 employment population, which are expected to increase to 38,000 and 60,600 respectively under the 2041 population projection. The largest population density increases in Area 58 are anticipated in parts of the Westminister-Branson, parts of the Banbury-Don Mills, and parts of the Bridle Path-Sunnybrook-York Mills neighbourhoods.

Table 4.1: Land Use Classification and Population

Land Use Classification		Area (ha)	Percentage of Total	Existing Population	Future Population
Residential	Single Family	328.6	20.7%	9,274	20,339
	Multi-Level Family	52.1	3.3%	14,779	17,662
Industrial/ Commercial/ Institutional	Industrial	184.9	11.6%	20,549	60,644
	Commercial	66.7	4.2%		
	Institutional	175.2	11.0%		
Open Space	Open Space	626.9	39.4%	-	-
	Roads / Lanes / Walkways	6.9	0.4%	-	-
	Utilities	6.7	0.4%	-	-
Land Use to be Verified	Vacant, Other & Unknown	143.0	9.0%	-	-
Total Area		1591.0	100%	44,602	98,645

4.2.2 Transportation

The City’s road classification through the Capacity Study area is provided in GIS format. The road classification was reviewed to determine the characteristics of the overland drainage system as well as the critical routes required by the City’s emergency services that may be impacted by flooding. The types of roads within the Capacity Study area include provincial expressway, major and minor arterial, collector and local.

4.2.3 Ownership and Easements

The property ownerships within the Capacity Assessment Study area consist of local residents, corporations, City properties (e.g. parks, road right-of-way, other open space), utility corridors (e.g. Hydro One corridor), TRCA, MTO and Canadian Pacific Railway lands. Should works need to be undertaken within privately owned properties, land acquisition or easement negotiation may be required.

The sewer system generally traverses the municipal Right-of-Way with the notable exception where the sewer systems cross private property by way of an easement. Easements are generally acquired by the City for infrastructure crossing property boundaries for municipal sewers and watermains.

Aquafor requested easement information for storm and sanitary sewers within the study area from the City, in order to determine the feasibility of sewer upgrades which cross private properties. Upon review of the easement agreements provided by the City, it was determined that there are five projects without adequate easement agreements to undertake the proposed improvement works. Provided below is a summary of the easement information the five Schedule B projects which was provided by the City.

Table 4.2: Schedule B Projects Easement Summary

Assignment	Assignment Area	Easement Location	Easement Status / Terms
A58-07	Robert Hicks Finch/Bathurst Area	Private Property (15 Torresdale Ave)	Has an easement agreement that allows for "... laying down, constructing, maintaining, altering, repairing and inspecting storm and sanitary sewers and related appurtenances ...".
		City Property (580 Finch Ave W)	No easement required
		Hydro Corridor (east of 580 Finch Ave W)	Has an easement agreement that allows for "... lay down, construct, operate, repair and maintain one twenty-one inch storm sewer ..." & " the works shall be of inside diameter not exceeding twenty-one inches and buried not less than eleven feet below ground level; and located along the centre line of the land ..." Easement re-negotiation may be required.
A58-28	Old Yonge Street	Private Properties (382 & 372 Old Yonge St)	No existing easement agreement has been located. Easement negotiation may be required.
A58-29	York Mills Road Area	Private Property (45 York Mills Rd)	No existing easement agreement has been located. Easement negotiation may be required.
A58-39	Belgrave / Highway 401 Area	MTO property (north of 68 Belgrave Ave)	No existing easement agreement has been located. Easement negotiation may be required.
A58-41	Eglinton Avenue East Area	TRCA Property (1155 Eglinton Ave E)	No existing easement agreement has been located. Easement negotiation may be required.
		Private Property (1150 Eglinton Ave E)	
		885 Don Mills Rd	
		50 Gervais Dr	
		895 Don Mills Rd	
		Canadian Pacific Railway property (railway at Don Mills Rd)	

4.3 Natural Environment

4.3.1 Geology and Hydrogeology

HLV2K performed the subsurface soil and ground water investigation in December 2019. A copy of the geotechnical report is included in **Appendix TM#1** and the key findings are summarized below.

The area is dominated by carbonate-derived silty to sandy till that has been identified as Halton Till by the Ontario Geology Survey (OGS) and as Glaciolacustrine deposits within the South Slope Region. The southern portion of the Study Area consists of coarser grained sands associated with deposition in glacial Lake Iroquois.

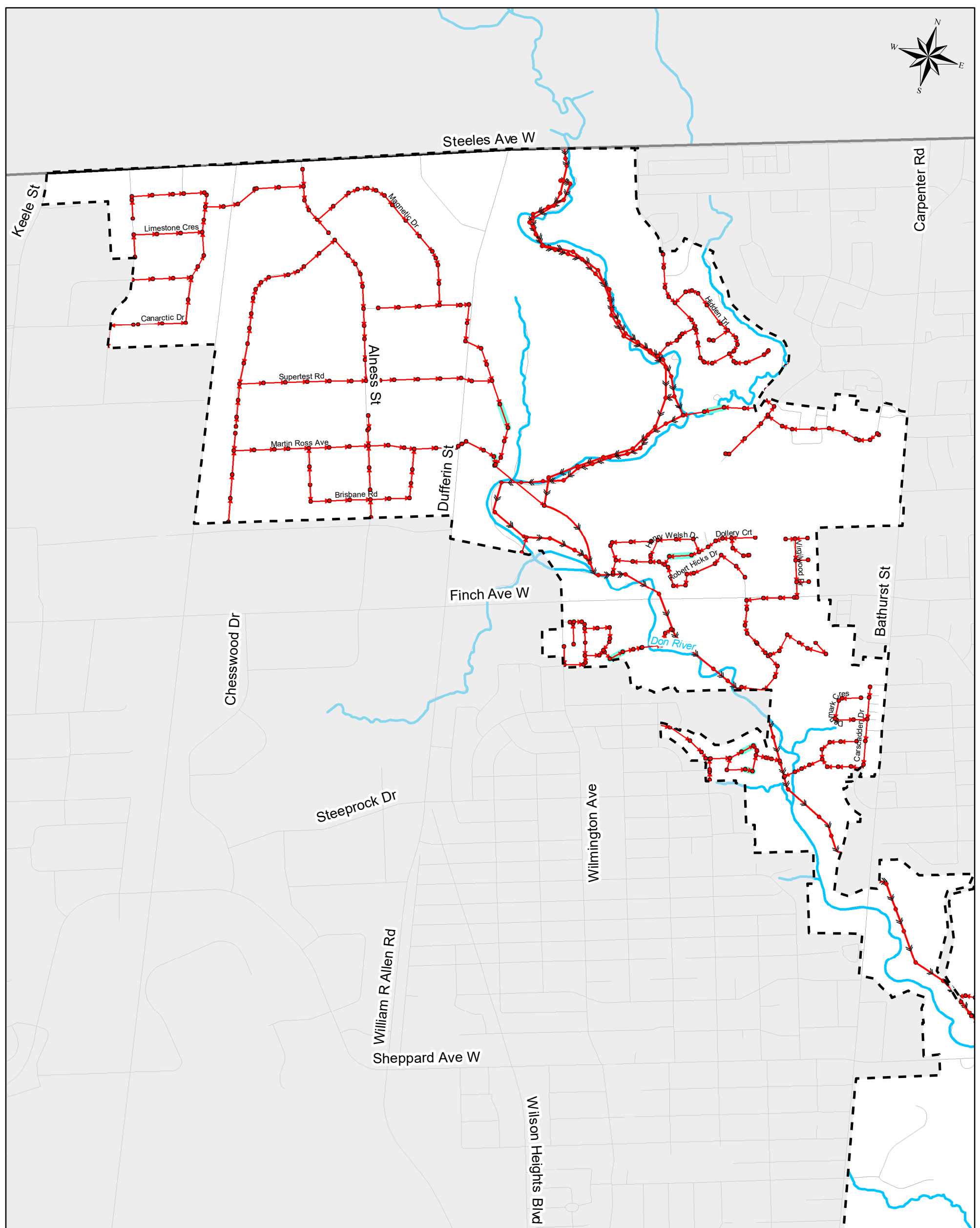
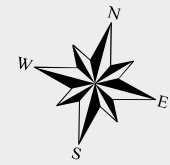
Groundwater levels were interpolated from available data of variable source quality. The groundwater depth variation was estimated to be between 1 m and 7.5 m mostly between Finch Ave. and Steeles Ave. areas along the Don River West Branch with most other areas with groundwater depth variation between 1m and 40m especially along the banks of the Don River West Branch. There is limited area for groundwater recharge due to the large presence of paved areas and rooftops. **Figure 4.5** illustrates that approximately 10.7% of the sanitary sewers (not including the Don STS) within the river valley have potential groundwater interactions (at groundwater elevation or within seasonal fluctuations) that may impact parts of the system within Area 58 where sewer invert elevations are within 1 m of the groundwater table. Any alternative replacing sewers where the groundwater table will impact storm or sanitary construction has the potential to require dewatering prior to construction.

4.3.2 Terrestrial Ecology and Environmentally Significant Areas

Terrestrial ecology features and functions both throughout Area 58 as a whole and associated with the five proposed Schedule B EA project locations. This section will provide a high-level overview of the terrestrial ecology throughout Area 58 and the sub-sections below will provide details for each of the five Schedule B projects to identify sensitivities / constraints and understand the potential impacts of any potential works. A desktop review based on the existing background data (e.g., recent aerial photography and existing natural heritage mapping) for study area 58 and a scoped field investigations were completed for the five Schedule B project locations.

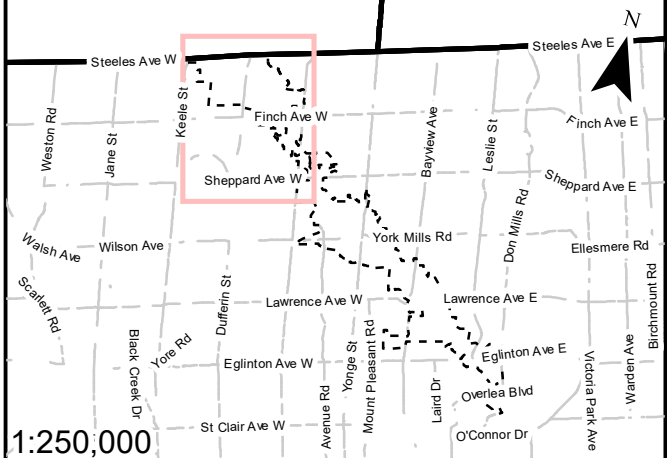
Area 58 extends over an approximately 14 km linear corridor centered around the Don River West Branch. Within this area, the river corridor varies in terms of woodland cover and condition but generally consists of a contiguous vegetated corridor between Steeles Avenue and the Don Valley Parkway. The overall corridor is interrupted by roadways of various sizes and is consistently surrounded by development; within and directly adjacent to the corridor, there are numerous municipal parks, recreational trails, golf courses, utility corridors, and sports facilities.

There are multiple locations in Area 58 identified as Environmentally Significant Areas (ESAs), which are designations that encompass significant habitats, rare landforms, unusually diverse habitats, or other important ecological features or functions (NSE et al., 2012). These locations include a portion or all of: E.T. Seton Park, Wilket Creek Forest, Burke Brook Forest, Glendon Forest, and Earl Bales Woodlot.



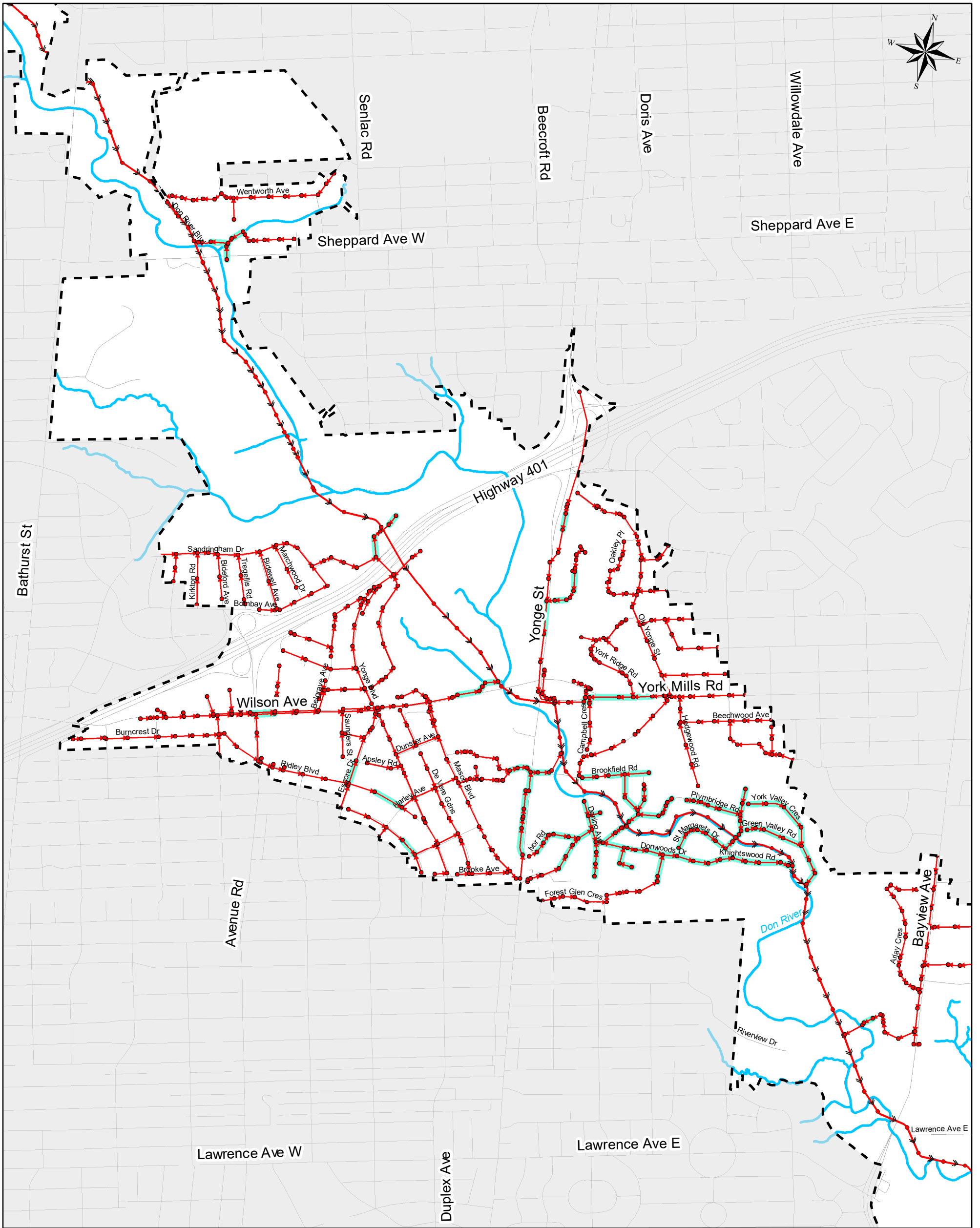
- Legend**
- Municipal Boundary
 - Sanitary Boundary (Revised)
 - Road Centreline
 - Watercourse (TRCA, 2012)

- Sanitary System Network:**
- Sanitary Sewer
 - Sanitary Trunk Sewer
 - Potential groundwater interaction
 - Sanitary Nodes



Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.5 (A)
 Groundwater Interaction with Sanitary Sewers

Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020
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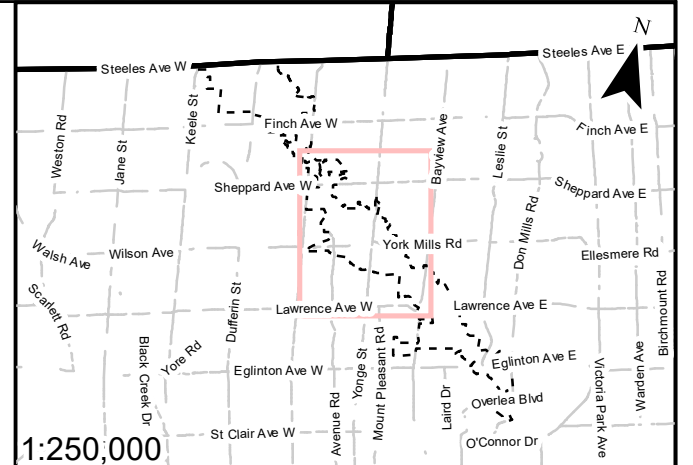


Legend

- Municipal Boundary
- Sanitary Boundary (Revised)
- Road Centreline
- Watercourse (TRCA, 2012)

Sanitary System Network:

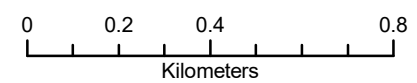
- Sanitary Sewer
- Sanitary Trunk Sewer
- Potential groundwater interaction
- Sanitary Nodes



1:250,000

Projection: NAD_1983_CSRS_MTM_10
Data Source: City of Toronto, TRCA, LIO

Date: May, 2020

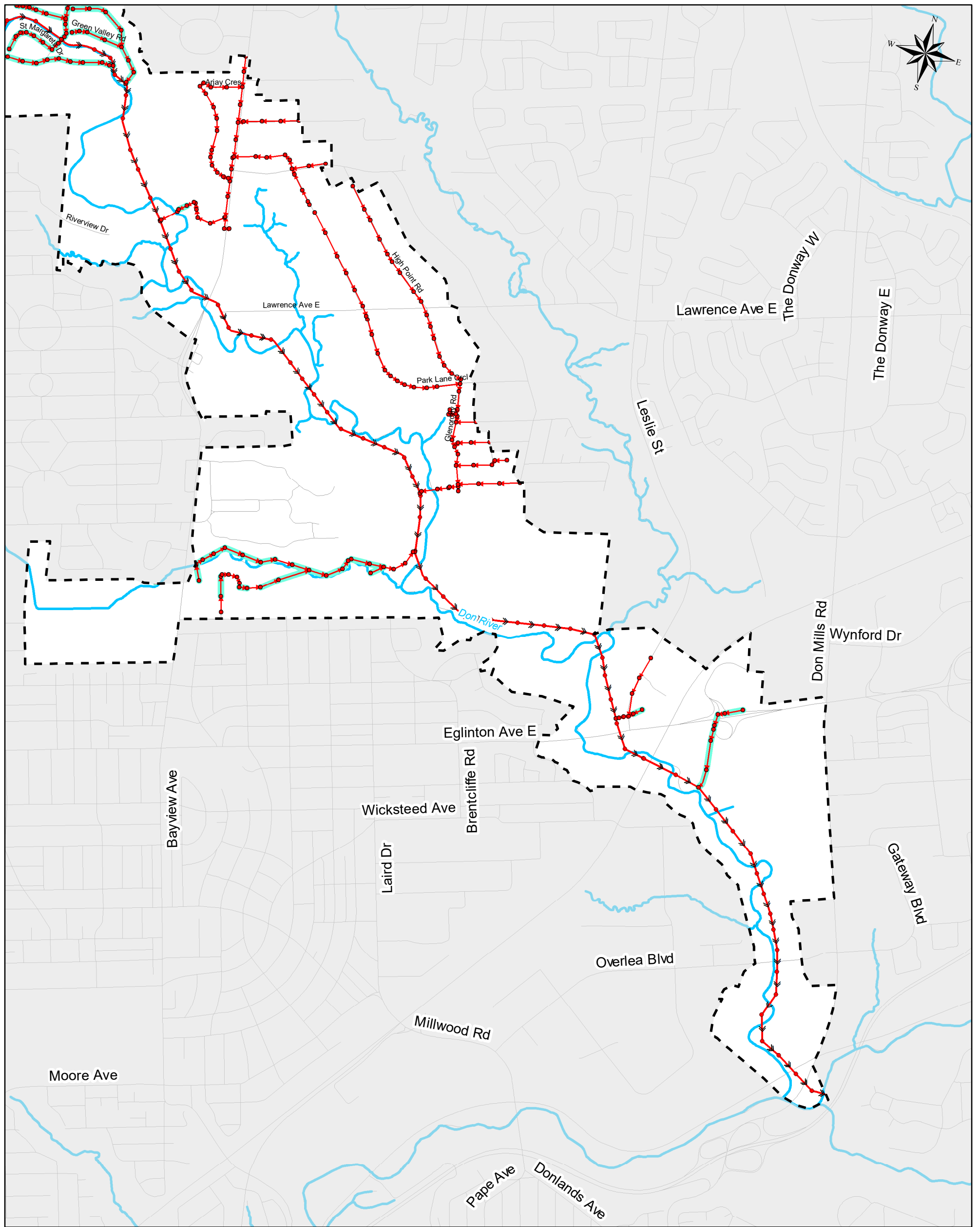


1:16,500



Project: Toronto Basement Flooding Study Area 58

Title: Figure 4.5 (B)
Groundwater Interaction with Sanitary Sewer

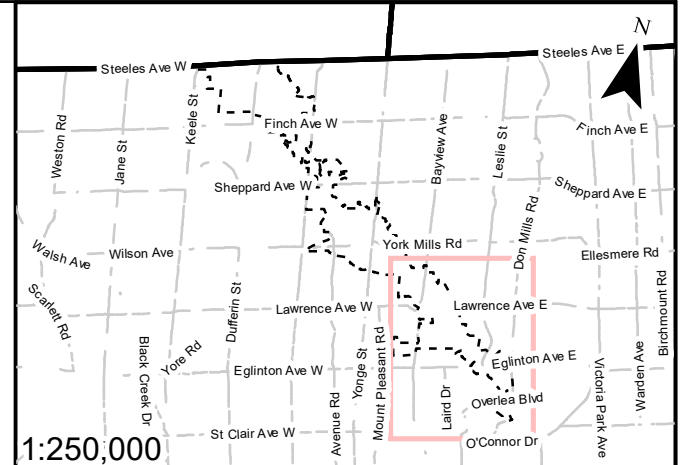


Legend

- Municipal Boundary
- Sanitary Boundary (Revised)
- Road Centreline
- Watercourse (TRCA, 2012)

Sanitary System Network:

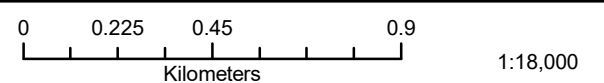
- Sanitary Sewer
- Sanitary Trunk Sewer
- Potential groundwater interaction
- Sanitary Nodes



Projection: NAD_1983_CSRS_MTM_10
 Data Source: City of Toronto, TRCA, LIO
 Date: May, 2020



Project: Toronto Basement Flooding Study Area 58
 Title: Figure 4.5 (C)
 Groundwater Interaction with Sanitary Sewer



4.3.2.1 Site A58-07 - Robert Hicks Drive Area

A review of this site location indicates that this site is almost fully developed and contains little to no terrestrial ecological features. A majority of the existing infrastructure is located within the municipal right-of-way with a few exceptions. There is one section that crosses a utility corridor, which appears to be mown turfgrass with no natural habitat; one section that passes behind a residential development and may therefore affect some landscaping trees, as well as one section where the storm sewer outlets into the West Don River through the G. Lord Ross Park. The existing sewer outlet location in the Don River corridor is associated primarily with mature riparian forest and some adjacent open habitats and is associated with an existing recreational trail. Any proposed works in this area would need to consider impacts to vegetation and the associated wildlife habitat.

4.3.2.2 Site A58-28 - Old Yonge Street

A majority of existing infrastructure at this site is located within the existing roadways, although there is also one location where the existing storm sewer outlets into a treed ravine feature (located between 372 and 380 Old Yonge Street). The natural area was reviewed by Aquafor staff in the field and found to contain a deciduous forest community with species including Norway and Sugar Maples (*Acer platanooides* and *A. saccharum*), Red Oak (*Quercus rubra*) and Basswood (*Tilia americana*). The ground layer was generally sparse with a few scattered urban species such as Winter Creeper (*Euonymus fortunei*), Garlic Mustard (*Alliaria petiolata*), Thicket Creeper (*Parthenocissus vitacea*), and Avens (*Geum* sp.). Overall, the valleyland was characterized as a mature woodland that was moderately influenced by the surrounding anthropogenic landscape.

4.3.2.3 Site A58-29 - York Mills Road Area

The overall area associated with Site A58-29 is similar to the previous sites in that it is highly developed and disturbed with few natural heritage features remaining. The sewer outlet location in this area is associated with mown parkland adjacent to the Don River containing isolated planted trees. Mature treed areas were also noted via air photos, particularly along the rear lot lines of properties on York Ridge Road and Old Yonge Street.

4.3.2.4 Site A58-39 - Belgrave Avenue

The existing infrastructure within this area is directly along Belgrave Avenue which is comprised of completely developed residential properties. The storm sewer discharges into a ditch along Highway 401 which consists of a sloped grass area and two mature trees.

4.3.2.5 Site A58-41 - Eglinton Avenue East and E.T. Seton Park

This site is generally located north of the intersection of Don Mills Road and Eglinton Avenue East., and south of Barber Green Road, encompassing much of the developed commercial/industrial lands in that area where most of the existing infrastructure is located within the municipal right-of-way or existing easements. It also includes approximately 300m of existing storm sewer discharging to the Don River through the E.T. Seton Park. The E.T. Seton Park ESA is described in background information as a “mixture of forested, cultural, swamp and marsh communities on the steep slopes and bottomlands of a ravine surrounded by parkland and urban residential development with the West Don River flowing south through the western portion of this site” and was noted in association with significant flora and fauna species (NSE et al., 2012).

Due to the potential presence of terrestrial ecological features, Aquafor therefore completed field investigations at this location to review the existing conditions of the site.

Vegetation Communities and Flora

The portion of E.T. Seton Park where the existing sewer is located is found to contain a large area of mown turfgrass park, plus a woodland area closer to Eglinton Ave. E. which was highly disturbed and transected by multiple pedestrian trails. The woodland was found to contain a mixture of Crack Willow (*Salix x fragilis*), Black Locust (*Robinia pseudoacacia*), Silver Maple (*Acer saccharinum*) and Sugar Maple. There was also a large number and concentration of non-native, invasive species such as Garlic Mustard, Dog-strangling Vine (*Vincetoxicum rossicum*), Tatarian Honeysuckle (*Lonicera tatarica*), White Mulberry (*Morus alba*), and European Buckthorn (*Rhamnus cathartica*). This is generally consistent with prior vegetation community mapping for the ESA (completed via TRCA data) which identified the affected area as a combination of Cultural Savannah/Plantation (CUS/CUP), Exotic Lowland Deciduous Forest (FOD7-c), and Sugar Maple-dominated Deciduous Forest (FOD5-3), with additional communities in the adjacent areas.

Terrestrial Wildlife

Aquafor's field investigations observed common, widespread bird species in E.T. Seton Park within the study area, including: Song Sparrow (*Melospiza melodia*), American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), and Northern Cardinal (*Cardinalis cardinalis*). However, species less common to urban settings were also observed due to the site being located within a larger natural corridor containing a mix of open, transitional, and wooded habitats. Species which were observed that are listed as L4 in TRCA's jurisdiction (indicating that they are considered vulnerable to declines in urban areas) include Great Crested Flycatcher (*Myiarchus crinitus*), Indigo Bunting (*Passerina cyanea*), Ruby-throated Hummingbird (*Archilochus colubris*), and Red-eyed Vireo (*Vireo olivaceus*). Chimney Swift (*Chaetura pelagica*), which is a Species at Risk (SAR) ranked as Threatened both provincially and federally, was observed in the area but only as a flyover (i.e., no nesting habitat potential on-site).

The eBird.org website, a community science database, lists "E.T. Seton Park - North" (which includes the study area) as a birding hotspot associated with 82 species observations since April 2021. The listed species include migrants and winter residents in addition to locally nesting species, and also include other locally and provincially significant species.

The iNaturalist.org website also contains an abundance of community wildlife observations within the accessible parklands in the area. Observed species include two amphibians (Green Frog [*Lithobates clamitans*] and American Toad [*Anaxyrus americanus*]), one snake (Dekay's Brownsnake [*Storeria dekayi*]), three turtles (Midland Painted Turtle [*Chrysemys picta marginata*], Snapping Turtle [*Chelydra serpentina*], and Pond Slider [*Trachemys scripta*] - all associated with the river), nine mammals (White-tailed Deer [*Odocoileus virginianus*], Eastern Gray Squirrel [*Sciurus carolinensis*], Northern Short-tailed Shrew [*Blarina brevicauda*], Raccoon [*Procyon lotor*], Coyote [*Canis latrans*], Virginia Opossum [*Didelphis virginiana*], Eastern Cottontail [*Sylvilagus floridanus*], Groundhog [*Marmota monax*], and Muskrat [*Ondatra zibethicus*]), and numerous insects.

Overall, the parklands provide habitat for a wide variety of species, including some that are significant or less common for the area.

Habitat and Connectivity

E.T. Seton Park at the study area location contains contiguous woodland both north and south of the river. Connectivity to additional wooded parkland in Wilket Creek Park to the north is available via an overpass at Eglinton Avenue East and, similarly, connectivity along the Don River to the south is available via an overpass at Overlea Boulevard. Wildlife habitat function and movement in this area is therefore considered to be relatively unimpeded, which is impressive considering the area's extensive development history; the Don River corridor likely functions as an important habitat linkage and movement corridor for wildlife in the area.

4.3.3 Aquatic Ecology

Fish community and aquatic habitat within and adjacent to the five project sites were reviewed using desktop procedures to first understand potential implications on aquatic and fish habitat. Those sites that were not observed as adjacent or immediately upstream of aquatic or fish habitat were determined to have negligible, if any, impacts on aquatic ecology. As such, only those sites that were determined to have potential implications on aquatic and fish habitat, through the review of open data aquatic and fish mapping such as the DFO Species at Risk Mapping Tool (Department of Fisheries and Oceans, 2021), the Aquatic Resource Areas (Ministry of Natural Resources and Forestry, 2015) and the Natural Heritage Information Centre (Ministry of Natural Resources and Forestry, 2019) were selected for in-situ aquatic habitat assessments. These sites included: A58-28 (Old Yonge Outfall) and A58-41 (E.T. Seton Park Outfall).

Habitat at these sites were initially reported on in the Don River Watershed Plan (Toronto and Region Conservation Authority, 2009). Site conditions along the West Don River (A58-41) and the contributing feature to the West Humber River (Site A58-28) were confirmed as a part of this study on May 16, 2022 by Aquafor Beech aquatic biology staff in accordance with Ontario Stream Assessment Protocol (OSAP), Section 4, Module 1: Rapid Assessment Methodology for Channel Structure (Stanfield, 2017). The aquatic components of the study area are described in the following subsections. Photographs from Aquafor's site visits are included below.

Aquatic habitat characteristics, as described in the following section, are major determinants for biotic composition, which is an indicator of aquatic ecosystem health. Understanding aquatic habitat can therefore determine relationships with biotic composition, providing a better understanding of subwatershed health and integrity. While aquatic habitat changes constantly, anthropogenic disturbance can impact habitat, stressing the relationship with aquatic habitat and biological/chemical indicators. The habitat characteristics investigated within the immediate study sites as well as the adjacent watercourses include:

- Bank characteristics;
- Stream width (wetted and bankfull);
- Instream cover (e.g., woody debris, undercut banks, boulders, vegetation);
- Riparian cover (vegetation composition, quality and width); and
- Physical barriers to fish movement (e.g., woody or debris jams, knickpoints, etc.)



Photo 1: Site 58-28, main storm outfall



Photo 2: Site 58-28, typical habitat looking DS



Photo 3: Site 58-28, accumulated yard waste and debris



Photo 4: Site 58-41, failed outfall and eroding banks



Photo 5: Site 58-41, typical habitat looking US from outfall



Photo 6: Site 58-41, typical habitat looking DS from outfall

4.3.3.1 Aquatic Habitat

Two OSAP sites were established along the as a part of this study: one on the West Don River (A58-41) and one on the contributing feature to the West Humber River (A58-28). Both sites were bordered by a narrow swath of natural heritage cover, with the majority of the aquatic and riparian habitat surrounded by urban development, largely consisting of residential landuse, with some commercial and industrial areas. OSAP findings and habitat characteristics for the study area are detailed in **Table 4.3**. **Figure 4.6** displays the sites in relation to the Fisheries Management Zones and Target Species areas provided in the Watershed Plan (Toronto and Region Conservation Authority, 2009).

The study area within the contributing feature to the West Don River did not demonstrate direct fish habitat, as the site was intermittent in nature, depending entirely on the contribution(s) from the storm outfalls beneath Old Yonge St and from the adjacent residential area. Overall, the study site was nearly buried beneath woody debris and yard waste contributed by the adjacent residences, with signs of major erosion and downcutting.

Similar to the study area within the East Don River, the study area in the West Don shared characteristics with an urban-adaptive watercourse, with signs of past engineering and infrastructure influences observed throughout. The study site was largely altered by the storm sewer outfall, with a wingwall deflecting flows and erosion creating scouring and pool habitat. No major fish barriers were observed, and the west Don River has been identified with the potential to support migratory Rainbow trout in the near term, along with darter species and White sucker, suggesting that the habitat may not be suffering from fragmentation (Toronto and Region Conservation Authority, 2009). Beyond this, the Watershed Plan notes that the study area is highly urbanized and has lost most of its species diversity over time (Toronto and Region Conservation Authority, 2009).

4.3.3.2 Fish Community Assessment

The Watershed Plan mapping details that the study areas represent intermediate riverine fish habitat for generalist minnow species, stating that due to the highly urbanized nature of the study area(s), the habitat has been unable to sustain the same diverse aquatic community over time, with an observed decrease in species than have been found historically. While this habitat is still able to support sensitive species such as darters, the lack of specialized feeders and piscivores indicates some degradation. As such, management for sensitive species and piscivores will also ensure the survival of the more tolerant fish species.

The Watershed Plan notes that Redside dace have not been observed within the subwatersheds since 1949, and in general, the watercourse has observed a decline in biodiversity. However, evidence provided in the Watershed Plan suggest that the West Don River, of which supported the A58-28 study area, provides habitat to a variety of fish species. The habitat in which site A58-28 was located is not mapped within the Watershed Plan, nor within other open data sources and does not appear to support fish species at any time of any given year.

Table 4.3: Habitat Characteristics

Site	Subwatershed/ Watercourse	General Flow Regime	Site Location	Site Characteristics	Habitat Description	Substrate Composition	Bank Stability	Instream and Riparian Vegetation	Fish Barriers and Other Disturbances
A58-28	Don River West Branch (tributary)	Intermittent	Site A58-28 was located within a contributing feature to the West Branch of the Don River although separated by Yonge Street and a golf course. No clear connection to the watercourse was observed and it appeared as though the flow depended entirely on overland stormflow.	The site extended from two PVC storm pipes (Photo 1) from Old Yonge Street and the residential area of which it services. Average wetted width at the time of sampling was ~0.8 m. The average depth at crossovers was 30 mm and the maximum depth sampled was less than 50 mm. The site observed clear signs of erosion and downcutting (Photo 2), with soft soils and clear stormwater contributions, as well as encroaching residential properties and yard waste (Photo 3).	This site demonstrated characteristics of a cascade system, with a steepened gradient and step pool morphology. The steps were largely contributed by woody materials, of which consisted of cuttings from adjacent residences and yard waste. This woody material and dumping contributed to in-stream cover, with some cobbles contributed by concrete waste and rip rap. Overhanging cover was entirely contributed by established deciduous canopy immediately adjacent to the bank(s). This channel appeared to be entirely dependent on storm flow from the upstream outfalls and did not demonstrate any direct fish habitat.	This site was largely contributed by finer substrates from the over steepened banks. Gravel and cobble were observed in the few places. The maximum particle size was contributed by concrete wasting.	The banks consisted almost entirely of silt. Both banks observed downcutting, with a significant drop from the top of the residential lawns on either side to the watercourse.	Instream vegetation was non-existent. Riparian vegetation consisted of mixed deciduous trees. Banks were limited by encroaching residential areas on both banks.	The site was immediately downstream of the Old Yonge St crossing. Nutrients and pollutants were likely contributed by this crossing, as well as the greater residential area that the outfalls serviced. Other contributions were likely adjacent residences and observed yard waste that had accumulated in the corridor. As the channel was intermittent in nature, over steepened and only contributed to by the upstream outfalls, it is anticipated that no fish habitat was present.
A58-41	Don River West Branch	Permanent	Site A58-41 was approximately 700 m downstream of the Eglinton Ave E crossing and was adjacent to the E.T. Seton Park and pedestrian trail. The site was contributed by an existing storm outfall that had failed (Photo 4).	Average wetted width was ~7 m. The average depth at crossovers was 60 mm and the maximum depth was greater than 1 m at the storm outfall. The site fell adjacent to a maintained park and pedestrian trail with a paved road within the riparian corridor on the north bank. Beyond the pedestrian path lay the manicured park land.	This site was largely contributed by a large, slow moving glide and pool immediately adjacent to the storm outfall and was delimited by two fast riffles at the up- and downstream extents (Photo 5 & Photo 6). The site was uniform in habitat characteristics, with evidence of engineering in the form of gabion retaining walls flanking the contribution from the outfall. Instream vegetation was very limited throughout.	Substrate was fairly well sorted, with gravels and cobbles consistent across the two riffles. Due to the depths of the pool at the storm outfall, pool substrates could not be confirmed. The maximum particle size observed was contributed by larger cobble, potentially resulting from fails gabion walls.	Both banks showed signs of instability, with steep bank angles observed throughout. Both banks were contributed by silts and erodible soils held together by mixed deciduous trees. Armouring was observed on the bank that the outfall was on, including concrete wing walls and gabion.	Instream vegetation was very limited. Riparian vegetation consisted of a well-established deciduous forest that provided the site with moderate cover. The aforementioned pedestrian path and manicured lawn limited riparian vegetation on the bank that the outfall fell on.	The site was well-buffered by the E.T. Seton park, however manicured lawn and trail encroached on the right bank. Eglinton Ave was immediately upstream of the site, along with a busy rail line crossing. Adjacent residential and commercial areas outside of the park lands likely contributed to nutrients and pollutant loading within the site and system. Other contributions were likely adjacent lawns and pedestrian paths, the storm water outfall on the right bank, as well as upstream land use. No significant barriers to fish were observed.

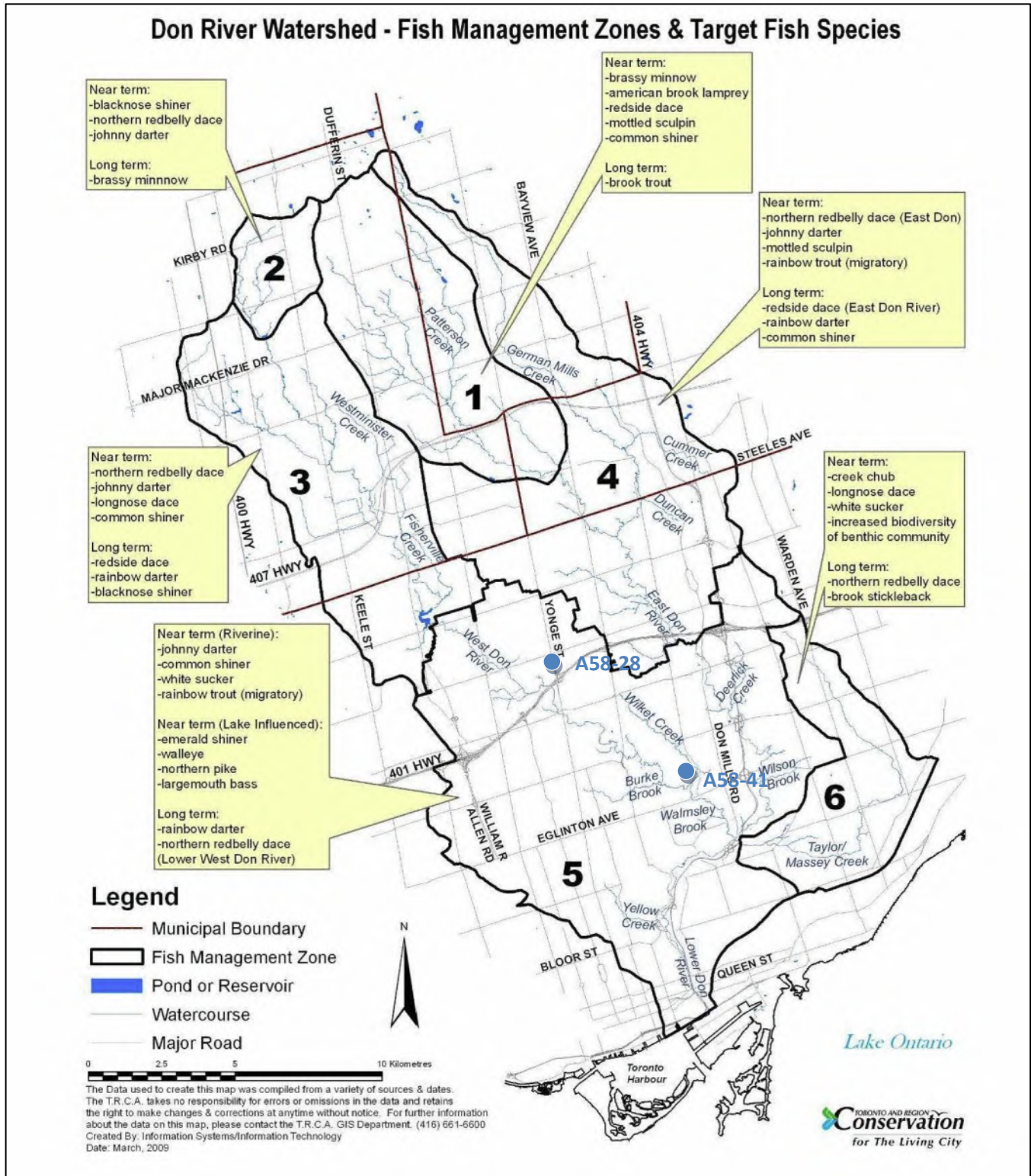


Figure 4.6: Fish Management Zones and Target Species

4.3.3.3 DFO Self-Assessment

The federal *Fisheries Act* requires that projects avoid causing the death of fish and the harmful alteration, disruption or destruction of fish habitat unless authorized by the Minister of Fisheries and Oceans Canada (DFO). This applies to work being conducted in or near waterbodies that support fish at any time during any given year or are connected to waterbodies that support fish at any time during any given year. As noted above, the A58-28 study area do contain fish at any time during any given year. Therefore, the *Fisheries Act* applies to works conducted in or near water at the site. The habitat in which site A58-28 was located is not mapped within the Watershed Plan, nor within other open data sources and does not appear to support fish species at any time of any given year.

Upon completion of the detailed design for the channel works at the study site, the works should be cross-referenced with the DFO “Projects Near Water” online service to determine if a request for regulatory review under the federal Fisheries Act is required (Department of Fisheries and Oceans, 2021). Based on field investigations conducted by Aquafor staff and background information provided by the TRCA, the study area does contain fish at any time during any given year. It is therefore the opinion of Aquafor Beech Limited that a request for regulatory review by Fisheries and Oceans Canada will be required. It is recommended that the proponent exercise the measures listed by Fisheries and Oceans Canada to avoid contravention with the Federal *Fisheries Act* and exercise due diligence by further mitigating accidental death of fish and the harmful alteration, disruption or destruction of fish habitat.

4.3.3.4 In Water Timing Window

As discussed above and as outlined in the federal *Fisheries Act*, the proponent is to exercise mitigation measures to avoid contravention with the Act and exercise due diligence by further mitigating accidental death of fish and the harmful alteration, disruption or destruction of fish habitat. With the proposed works being undertaken within and/or adjacent to the East and West Don River, construction should be undertaken such that the construction timing will be limited to outside of the critical life stages of the fish community listed by the Watershed Plan (Toronto and Region Conservation Authority, 2009). The In-water Work Timing Window Guideline (Ministry of Natural Resources and Forestry, 2013) outlines that based on the reproduction requirements of the fish community within the watercourses and the study site within them, that no in-water works are to take place **between March 15th and July 15th** of any given year to respect spring spawning species for the MNRF Southern Region.

4.3.4 Species at Risk Screening

For the purpose of this assessment, Species at Risk (SAR) are defined as species designated Endangered, Threatened, or Special Concern by the Ontario *Endangered Species Act* (ESA) and/or the Canadian *Species at Risk Act* (SARA). Aquafor screened for potential SAR associated with each site by reviewing background resources and mapping including the provincial Natural Heritage Information Center (NHIC) species occurrence database, TRCA flora and fauna data, provincial species atlases, and community science observation websites. The results of this search were then screened by comparing the habitat requirements of the various species to the habitat that is present on site. Species with no available habitat were screened out of any further assessment.

The majority of the sites discussed in this document are highly developed/disturbed and contain few to no natural heritage features, and therefore have minimal ability to support habitat of SAR. However, there are some exceptions which may require additional assessment or mitigation measures. The following considerations apply to all sites:

- Endangered bat species: habitat for Ontario’s four SAR bats occurs primarily in woodlands but could feasibly also occur in association with mature trees along streets or on residential properties (particularly where those trees grow in proximity to each other and contain cavities, peeling bark, or similar features). The previous section of this report noted a requirement for tree inventory to be completed for any location where removal of or injury to trees would be required to complete the proposed works. As part of this task, the potential of the inventoried trees to provide bat habitat features should also be documented to determine any potential requirements for that activity under the ESA.
- Butternut (*Juglans cinerea*): This Endangered tree species was flagged as occurring in the general area via background records. The tree inventory noted above will confirm presence/absence of this species in the specific study areas and determine if there will be any conflicts resulting from the proposed work. If a Butternut is found and will be potentially impacted, then a Butternut Health Assessment should also be completed.
- Birds: SAR bird species (e.g., Wood Thrush [*Hylocichla mustelina*], Eastern Wood-pewee [*Contopus virens*]) were noted via background records in the general study area, and numerous other bird species protected under the *Migratory Birds Convention Act* (MBCA) are also present. Impacts to bird habitat should be confirmed during detailed design, and timing windows will be required during construction to protect nesting birds in keeping with the MBCA.

The following additional consideration applies only to Site A58-41, which has additional habitat and species considerations associated with proposed impacts in E.T. Seton Park:

- Turtles: Records of turtles including Midland Painted Turtle, Snapping Turtle, and Northern Map Turtle (*Graptemys geographica*) exist for the vicinity of this site, and habitat in the river corridor may be used by these species. Any work near the water during the active season is recommended to observe mitigation measures and best practices such as the installation of exclusion fencing around active work areas and stockpiles, erosion and sediment controls to protect aquatic habitats, and general awareness and monitoring for wildlife.

It is recommended that this SAR screening be revisited and updated at detailed design to ensure that species listings are up-to-date and all potential impacts are accounted for. Any proposed impacts to Endangered and Threatened species may require additional consultation with the MECP or may require the proponent to follow the project registration process for projects eligible for exemption under O.Reg. 242/08.

4.3.5 Natural Heritage and Archaeological Potential

ASI was subcontracted by Aquafor Beech Limited to conduct a Stage 1 Archaeological Assessment and preliminary Cultural Heritage Assessment in support of the City of Toronto’s Basement Flooding Protection

Program – Bundle C Project. A brief summary of the major findings from the two completed assessments is provided below, with full reports appended to **Appendix** .

The Stage 1 Archaeological Assessment was completed in accordance with the Ontario Heritage Act, the 2011 Standard and Guidelines for Consultant Archaeologists, the Environmental Assessment Act, the Municipal Class Environmental Assessment process and the Master Plan of Archaeological Resources for City of Toronto. At the onset of the study a detailed literature review was conducted, documenting temporal changes in land use and settlement history as the study area transitioned from historic indigenous land use to predominately Euro-Canadian settlement and then into the modern day. Historical area maps, aerial imagery and geological records were reviewed for all four major sub-areas to delineate major transportation routes, watercourses, and settlements.

The primary objective of the stage 1 assessment was to define areas of archaeological potential. This was accomplished through a combination of onsite property inspections, an assessment of historic aerial & orthoimagery, identifying archaeological sites already documented within the Ontario Archaeological Sites Database (OASD), and reviewing previously completed archaeological assessments. The sites were evaluated to understand the potential archaeological disturbances as a result of the implementation of the preferred engineering design solutions. Six locations within A58 were determined to have archaeological potential (see **Table 4.4**), of which Seg ID 58 is within Schedule B Assignment A58-41.

Table 4.4: Areas of Archaeological Potential Within Area 58

ASI SegID	Location	Sewer Type	Proposed Work
24	21A Hearthstone Crescent to West Don River and Hydro Corridor	Storm	Upsizing Existing Sewer
31	17 Eastview Crescent to 19 McGlashan Court to 3900 Yonge Street to 3995 Yonge Street	Storm	Upsizing Existing Sewer
50	36-38 Glenorchy Road to West Don River	Storm	Upsizing Existing Sewer
51	1931 Bayview Avenue to West Don River Trail	Storm	Upsizing Existing Sewer
55	1120 Leslie Street to West Don River Trail	Storm	Upsizing Existing Sewer
58	1155 Eglinton Avenue East to West Don River Trail	Storm	Upsizing Existing Sewer

Any future construction at the six locations noted above (including stockpiling and staging areas or access roads) will require that a stage 2 archaeological assessment be completed prior to proceeding with the planned construction works.

4.4 Cultural Heritage Assessment

ASI also completed a preliminary Cultural Heritage Assessment to present an inventory of known and potential Built Heritage Resources (BHRs) and Cultural Heritage Landscapes (CHLs). BHRs and CHLs were identified through a desktop analysis investigation which included a combination of background research, literature review, stakeholder data collection and review of available heritage inventories / databases. The study area exhibits significant cultural heritage potential with rural land use history dating back to the early nineteenth century and urban land use history dating back to the early to mid-twentieth century. In total 39 known BHRs were identified within the study area and the types of properties each BHR is located on include Commercial (1),

Institutional (3), Religious (1), Residential (28), Religious/Educational/Residential (1), Residential/Institutional (2), Residential/Religious (2), Residential/Educational (1).

Upon completion of the detailed design phase, a full Cultural Heritage Report should be prepared by a qualified cultural heritage professional. Preparation of this report will involve additional field assessments to identify BHRs and CHLs that are not documented in the existing heritage inventories. This report should be submitted to heritage planning staff within the City of Toronto’s Heritage Preservation Services department for final approval before commencing with construction of the preferred solution.